CHAPTER SIX
Feasibility of a User Financed WCC

INTRODUCTION

The previous chapter (5) concludes that the WCC, due to the price tag for its development, can really only be pursued if the users of the corridor can finance the development and maintenance of the corridor, as well as to partially or fully reimburse government for its costs associated with developing the corridor. This chapter evaluates the potential for capturing funding from the future users of the corridor.

The Need for Funding

It is important to consider this corridor in relation to the significant funding challenge presently faced by the State of Washington. A key issue clearly articulated by many agencies and jurisdictions (responsible for transportation investment along this corridor) is once again brought to bear by this study; That is, this study further emphasizes that any major transportation project intended to resolve multimodal needs along the I-5 corridor will likely require resources that far exceed existing levels.

This broader policy issue is not the focus of this study, but at least warrants mention in this report. The focus of this Study is to determine whether there is the potential for users to pay for the development of the WCC, as defined by legislation.

FACTORS THAT FEED INTO DETERMINING PRIVATE SECTOR INTEREST

The WCC as proposed by the Washington State Legislature is a corridor built and operated entirely by private concerns. Accordingly, feasibility must be assessed from the perspective of the private sector, particularly from the perspective of potential developers of the corridor. Only projects that are very likely to succeed financially will be undertaken by private entities. Since private entities can deploy their resources (time and money) in many different ways, they owe it to their investors and employees to deploy those resources for the greatest monetary return.

The ultimate question determining financial feasibility is whether the revenues expected to be generated by the facility are sufficient to pay the capital and on-going operating costs of the facility, plus a reasonable return on investment on any equity invested. However, a project must be completed before it can generate revenues. Before investing in a project, a developer must be convinced that construction completion is highly likely. Thus pre-construction and construction risk must also be evaluated. These three elements (pre-construction issues, construction risk and financial feasibility) are addressed in turn below.

Pre-Construction Issues

For a private developer to be interested in a project, certain conditions must exist.

Sponsor Commitment – Usually, a developer assesses the priority of the project to the sponsor (in this case, the State), and the interests of the various parties who are required to act (or not act) in order for the project to succeed. A developer is unlikely to proceed if support for the project is tenuous. However, there are a number of ways that support for the project can be indicated:

1. With legislation that specifically authorizes the project and removes any pre-existing statutory hurdles.
2. Through creation of an entity charged with development of the project.
3. Through availability of funds for pre-development activities, such as those made available through the Texas Mobility Fund.

Broader support can be indicated through a public process in which consensus about the need for the project is achieved. Finally, right-of-way acquisition and the completion of the environmental process are the ultimate indicators to a private entity of public support for a project.

Sponsor Process – A developer is unlikely to compete for an opportunity to undertake the project if they feel that the selection process is biased against them. In order to truly have a competitive process with more that one potential developer bidding, a sponsor must run a fair and open bidding process. A project developer also needs "certainty in outcome," or the confidence that the sponsor will follow its own process to a fair conclusion.

Timing - The timing of a proposed project – when construction is expected to start and be completed, and when revenues are expected to begin – is important information for developers. Most development teams are headed by construction firms that expect to make most (if not all) of their money on constructing the project. Thus, if there are two different projects offering similar returns, the developer will most likely choose the project that starts earlier due to the time value of money. Further, the developer will assess the risk associated with the construction start date. A project that is more likely to be delayed will be less attractive to developers.

There are many hurdles to be overcome before a project ever enters the construction phase. Generally, private developers will not commit capital to a project before these hurdles have been passed.

Right-of-way - A project cannot be built until virtually all right-of-way is secured, or until alternatives exist for parcels that are in question. Developers typically do not participate in right-of-way acquisition. Public entities have the power of eminent domain, which provides much more certainty for acquisition. In addition, it may be undesirable from a public policy perspective for a private entity to own the right-of-way. Ownership would enable the developer to direct future development of the property to serve its own goals and objectives, which may or may not be consistent with public good.

The Alameda Corridor Transportation Authority freight rail project illustrates how right-of-way acquisition can accelerate project completion. At the end of 1994, three railroads agreed to sell most of the property required for the construction of the Corridor to the Port of Los Angeles and Long Beach. The sale was completed pursuant to a memorandum of understanding committing the railroads to pay the Ports for the use of the Corridor after completion. In this case, property was actually transferred out of private hands to public control to facilitate project development. The property acquisition was instrumental in moving the project toward financing, construction, and operation.

Environmental - This is one of the most critical elements of pre-construction risk. Preparation of environmental documents and obtaining necessary environmental approval is costly and time-consuming. If the approval is disputed, a project can be mired in costly legal battles for long periods of time, or even derailed entirely. History has shown that developers are unlikely to involve themselves until the environmental process is complete. Again, this is an area that is better handled by the public sector.

The San Joaquin Hills Transportation Corridor is a good example of the importance of public control of the environmental process. Even though a Record of Decision on the final Environmental Impact Statement was recorded in July 1992, several lawsuits were still filed to challenge the environmental permitting process. However, based on previous court decisions on the project, and an assessment of the maximum time required to conclude the legal process, financing proceeded. Proceeds of the issue (capitalized interest) was set aside to ensure that interest would be paid to bondholders during the legal process. Construction outside the disputed areas was able to proceed, thus accelerating project completion.

Utility Relocation - This is another area of project risk for a developer. Utility relocation risk can be managed by a developer if there is access to good information about the utilities in question. In most cases, this would require the sponsor to provide a warranty that the information provided is accurate.

The Alameda Corridor Transportation Authority project serves as an example of successful allocation of utility relocation risks. At the time of financing, approximately 650 relocations or removals were anticipated along the length of the 20-mile corridor. The Authority strove to minimize risk of delay by early identification of facilities, and by negotiating agreements with most of the owners of major facilities located in the North End and Mid-Corridor segments of the project prior to financing. Similar agreements for facilities in the South End segment were under negotiation at the time of financing. For to the Mid-Corridor segment, many of the Authority's obligations under the agreements were passed to the design-build contractor, who had limited access to a time extension or a price increase under the terms of the design-build contract.

Construction Risk

Clearly, if the project cannot be constructed, there will be no revenue and the project will not be successful from the point of view of a private developer. If the project takes longer to build or costs more to build than the developer anticipated, then the financial return will not be as favorable as expected. Some of the risks that a developer evaluates include the following:

- **Site conditions.** A significant cause of delay and cost increase is surface and subsurface conditions that are different that anticipated. Potential developers need access to, or the ability to conduct, extensive analysis on subsurface conditions.
- **Utilities.** As described above, utility relocations can have major implications for cost and schedule, particularly due to the coordination that is required between the developer and the utilities. The availability of accurate information will reduce this risk and make a project more attractive to a developer.

- **Permits.** As discussed above, environmental permits must be obtained before private participation can be obtained. However, there are usually other local permits that must be obtained. The developer must assess whether there are any significant obstacles to obtaining these permits.
- **Labor.** Labor costs make up a significant portion of the cost of any major transportation project. A steady supply of skilled labor is thus essential to the completion. This risk can be mitigated with a master labor agreement.
- **Raw materials.** Raw materials cost is the other significant cost of a major transportation project. A developer would assess the risks related to availability and cost of the necessary materials. For example, the costs of both concrete and steel have skyrocketed in response to high levels of demand in China. An example of the impact of raw materials cost are the bids recently received for the self-anchored suspension (SAS) portion of the new east span of the San Francisco-Oakland Bay Bridge. The engineers' estimated cost was $700 million, while the single bid received contemplated a cost of $1.8 billion (using domestic steel under "Buy America" rules) or $1.4 billion (with no source restrictions).

Contractor Bonding - Another separate but related issue is contractor bonding. Sources for payment and performance bonds are significantly fewer that just a few years ago. This is a topic that must be considered by both the sponsor (in considering what to require in the way of bonds), and for the contractor in determining how much the project will cost to construct. The new east span of the Bay Bridge serves as an example of the impact of contractor bonding requirements on project cost and schedule. The September 11, 2001, terrorist attacks had a significant impact on the capital of the property and casualty insurance companies that are the surety bond providers' parent companies. While much of this capital has been replaced, insurance companies have become highly selective in the use of capital. In addition, the surety providers no longer determine risk based on historical loss experience, but rather based on bond amount, duration and likelihood of full forfeiture. The combination of these factors has reduced the availability of and price competition for surety bonds, particularly for projects over $500 million. In response to this development, Caltrans increased the number and decreased the size of separate contracts on the Bay Bridge seismic retrofit project in an attempt to attract more bids and achieve a lower project cost.

Financial Feasibility

Once the pre-construction and construction risks have been assessed and mitigated to the extent possible, a question still remains regarding the financial viability of the project: will the forecast revenues exceed the debt service and operation and maintenance costs of the facility? Financial feasibility is assessed in the following way.

Revenues - First, all existing and potential sources of revenue are identified. In the case of the Commerce Corridor, these revenues could include:

- Tolls (collected from cars and/or trucks),
- Fees for transmission of gas or electricity, and
- Lease revenues from other co-located utilities (broadband, cable, etc).

An independent revenue forecast from a qualified firm would be required. Usually such a forecast would include multiple scenarios such as expected use, high and low usage. The forecast might take into consideration economic growth expected in this region, and to the south and north; volume of trade expected across the Canadian border; development along or near the proposed Corridor; and fuel prices.

Operations and Maintenance - Assuming that maintenance on the project would be paid for from the revenues generated by the project, these costs would also be forecast by a qualified firm. One important component of O&M costs on this type of project is insurance. If the facility is damaged or destroyed, it must be replaced or bonds must be able to repaid from insurance proceeds.

Debt Service - Bonds would most likely be issued to fund the cost of all or a portion of the project. The bonds would bear interest at a fixed or variable rate (like a home mortgage) until the principal is repaid. The amount of bonds to be issued depends on several factors including: the cost of the project, the amount of equity (if any) put into the project, the amount of money that must be set aside to pay interest to bondholders prior to project completion and revenue generation (capitalized interest), debt service and other reserves required to be funded and costs related to issuing the bonds (bond insurance, rating agency fees, underwriters' spread, legal counsel, etc). The interest rate on the bonds also depends on several factors, including: the credit quality of the issue, the final maturity on the bonds, whether the rate is fixed or variable, the general level of interest rates when the bonds are issued, and whether the bonds are taxable or tax-exempt. Tax-exempt bonds bear a lower rate of interest (and therefore improve project feasibility) because the holder of the bonds doesn't pay Federal (or state, in many cases) income tax on the interest earned. There are many rules governing the issuance of tax-exempt bonds, but in most cases a project must be publicly-owned to enjoy the benefits of tax-exemption.

Debt Service Coverage - Generally, it is not sufficient for revenues to be equal to debt service and O&M costs. There must be some extra revenue or ("coverage") to provide a cushion for unforeseen event and inaccurate projections. The coverage factor can range from 25% of debt service (1.25x debt service coverage) to 100% of debt service (2x coverage).

IDENTIFICATION OF POTENTIAL USERS

Another factor that private sector developers consider is the level of certainty of attracting potential users to pay for the service offered by project. In general, developers will choose to invest in projects that appeal to a large target market of users willing to pay for the service. Previous documents produced by this Study (particularly *Chapter 2*) identify two sets of potential users of the WCC:

Utilities sector
- Power industry – 500 kilovolt transmission line.
- Natural gas industry - High pressure transmission line.
- Petroleum industry - Refined petroleum products.
- Telecommunication industry - Analog and digital communications.

Transportation
- Truckers - Exclusive commercial vehicle four-lane roadway.
- Freight rail carriers - Double track, shared with passenger rail.
- Automotive users - Four lane roadway with weight limits.
- Passenger rail - Double track, shared with freight rail.
- Non-motorized - Shared use path and separate equestrian trail.

In the following pages, we have evaluated the potential for each of these components to participate in the development of the corridor.

WILL THE ENERGY SECTOR PARTICPATE IN THE DEVELOPMENT OF THE CORRIDOR?

At present time, the interests of the utility industries are not consistent with a long-range project like the WCC. They would not participate in such a project if it was moved forward.

This conclusion is based upon four fundamental factors:

1. **Distribution Patterns** - Uncertainty in the long term direction and pattern of distribution and transportation of energy in the region and the nation;
2. **Differing Planning Horizons** - The long term planning horizon for the energy industry is around 5 years (up to 10 years at most), which is not consistent with the long term outlook for this WCC project;
3. **Location of the Corridor** – Discussion with utility industries indicate that any expansion will most likely occur in the eastern portion of the state, outside of the purview of this study. The location of the WCC is not consistent with the location of future major corridors that the industry anticipates will occur;
4. **Risk for the Public Sector** - 60-80% of the costs associated with the development of the energy component consist of right-of-way acquisition. It is this assembly of right-of-way that is thought to be a legitimate role for government participation if the corridor were to be developed. However, the risk associated with leading the largest share of the cost, even if government were to be fully reimbursed for the ROW (even at a windfall), is too great, particularly in a time when government resources are already under considerable pressure.

Uncertainty of Long Term Energy Distribution Patterns

Based on a recent report, energy (natural gas) demand continues to grow at approximately 2 to 3% annually[1], and is expected to continue growing at the same rate. The demand exists within the state of Washington, particularly within the population centers along the western coast of the Puget Sound. This market, however, is far overshadowed by the demand from California and the rest of the Southwest. The premise for including energy as a potential component of the Washington Commerce Corridor is that the mainline N-S distribution capacity to serve these markets is both inadequate and antiquated, and that the energy distribution sector would need to add additional mainline capacity[2]. The WCC would serve as the location for adding this additional capacity, in a dedicated, secure corridor, removed from urban centers, and in conjunction with the development of additional transportation facilities.

While this report does not rule out the likelihood that the energy distribution industry may add additional N-S capacity, there is no concrete evidence that the sector has plans to make significant N-S investments. There are several factors that add uncertainty to the direction of distribution capacity:

[1] Source: Foothills Energy Corridor Study; Van Ness Feldman, P.C, September 2004.
[2] Industry interviews revealed that there is “sufficient capacity” through 2008.

1. **Changes in Market Dynamics** – Due to volatile market dynamics, distribution patterns are generally short term, not long term. The energy industry produces a commodity on very low margins, and therefore must adjust raw material sources quickly in response to changing market dynamics. Changes in market dynamics greatly influence the distribution pattern for energy. For example, in the 1990's, over 70% of Puget Sound's natural gas was Canadian, but by the year 2000, gas from the Rockies was cheaper, and the distribution pattern changed to favor natural gas from the Rockies.[3] As of this writing that trend is again beginning to reverse itself.
2. **Competing Distribution Methods** – The distribution sector is evaluating alternative distribution methods that would compete with the traditional corridor based methods. For example, the natural gas distribution sector is investigating shipping natural gas in a liquid form on barge vessels to serve markets N-S along the coast, and the transporting the LNG inland by "lateral pipelines", reducing the need for major N-S mainline capacity. The electrical power generation industry is projecting the use of smaller generation plants closer to the power consuming markets, thereby reducing the need for mainline N-S power distribution capacity[4]. While our research has no solid evidence that either of these trends may actually revolutionize distribution patterns, the existence of these trends further diminish the solid case for a major N-S corridor.
3. **Desire to "Make Do"** – Faced with increased ROW costs, construction and materials costs, and increased public resistance toward the development of energy facilities, specifically the "Not In My Back Yard" (NIMBY) stance by many communities and citizens throughout the state, as well as a wider range of legal and political opportunities for slowing down and even blocking major projects, the energy sector has found ways to optimize the capacity of the existing system. Much of their capital improvement plans are targeted at "normal repairs and upgrades[5]". The sector's desire to avoid significant public confrontation further adds to the uncertainty for N-S mainline capacity. Note that this point may be the basis for the public sector to lead the environmental clearance and ROW acquisition process, and selling the ROW to the private sector (see the section titled "Risk for the Public Sector").

Differing Planning Horizons

As explained earlier, distribution patterns are short term, not long term due to volatile market dynamics. While the industry expects to be delivering gas for the next fifty years, the leading distributors for the current energy types/uses cannot predict the success of other competing energy uses, or the effect of the other energy uses on their own business. Therefore, the planning horizon for the current industry leaders is short term (5-10 years), relative to the 20 to 50 year outlook for this project. It is anticipated that, even under the most aggressive schedule, it will take more than 5 years for the WCC to actually designate and approve for construction any energy and transportation facilities.

The premise for this study is that the corridor will ultimately be demanded and paid for, in part, by the private sector energy distributors over the next 20-50 years. However, the industry itself does not have the ability and confidence to accurately predict its own dynamics beyond the next five

[3] Source: Based on interviews with major gas distribution companies, April 2004.
[4] Source: Ibid.
[5] Source: Ibid

years. This mismatch in planning horizons further diminishes the feasibility of the WCC, as it is currently conceived.

Location of the Corridor

The current alignment of the WCC, as dictated by the legislature, is to serve as a N-S corridor to by-pass the populated urban areas along the coast, while remaining west of the Cascades, also connecting to potential energy corridors in Canada and through Oregon. However, the consensus within the industry is that future N-S energy distribution, particularly of an interstate and international nature, will likely occur to the east of the current WCC alignment, if at all in Washington State[6]. This consensus is primarily based around the promise of increased petroleum and natural gas production in Canada and Alaska, and the shipment of the product to markets in the US and Canada. Given the concentration of population and industry around the Great Lakes and the East Coast (Canada and US), as well as the emerging Southeast US, it is anticipated that mainline N-S distribution capacity will tend towards the east, with secondary distribution to the west coast branching off main N-S alignments.

Risk for the Public Sector

The points made thus far could arguably provide the basis for the public sector setting aside ROW for the energy components of the WCC, regardless of the uncertain outlook for the energy industry. There are several factors that provide a strong case for such a scenario:

1. **Seemingly Insatiable Demand for Energy** – The continued demand for energy seems to be an argument on its own for developing the WCC. A sustained 2-3% annual growth will surely exceed current capacity.
2. **Smart Growth Practices** – Given the sporadic and unpredictable nature of the energy industry, there is no telling where the next gas line, or oil line or power line will be built. It is conceivable, that without advanced energy corridor planning by government, the development of future facilities will lead to conflicts between urban planning and infrastructure development. A single planned corridor that can accommodate all energy uses will likely lead to fewer development conflicts than multiple single use corridors spread throughout the Puget Sound region.[7]
3. **Synergies** – Synergies from co-developing multiple infrastructure uses within a single corridor could lead to lower development costs, improved efficiencies and streamlined approvals.

These factors provide a solid basis for arguing that government should play a leading role in developing the corridor, assembling the ROW and leading a streamlined permitting process. In addition to the public benefits from this approach (government leading the planning and development of the WCC), the prospect that government would be fully or partially reimbursed by the users of the corridor further strengthens the case.

Typically, the upfront costs borne by the government represent the smaller share of the overall costs. The lower the upfront costs, the lower the government's exposure to the financial risk. However, 60-80% of the costs associated with the development of the energy component of the

[6] Source: Ibid
[7] Source: Foothills Energy Corridor Study; Van Ness Feldman, P.C, September 2004.

corridor are estimated to be right-of-way costs[8]. The relative risk associated with fronting the largest share of the cost, even if government were to be fully reimbursed for the ROW (even at a windfall), is too great, particularly in a time when government resources are limited, and particularly based on the unpredictable nature of the energy sector.

Conclusion

There is little evidence that the private energy sector would be willing to lead the development of the WCC energy component. In addition, there is an extremely high level of risk associated with the public sector assuming the lead role in setting aside sufficient ROW. Therefore, on a speculative basis, the energy component of the WCC does not present a highly feasible option at this time. However, the Foothills Energy Corridor Study[9] makes several policy level recommendations for planning the development of future energy corridors in the state of Washington which should be taken into consideration by policy makers. The most significant of these is the need for a single entity responsible for the development of a statewide energy infrastructure strategy and its implementation.

WILL THE PRIVATE SECTOR PARTICPATE IN THE DEVELOPMENT OF THE TRANSPORTATION COMPOMENTS OF THE CORRIDOR?

The approach toward evaluating and discussing the role of the private sector in the development of the transportation components of the WCC is different than the approach used to determine the feasibility of the energy components of the corridor. The difference stems from the historical role of the government in developing transportation and energy infrastructure. Government has historically played a greater role on the transportation side, and less on the energy side. However, the private sector is playing an increasing role in leading the development of transportation infrastructure, specifically where user fees and tolls are sufficient to service the debt associated with developing transportation projects. Therefore, the key issue to resolve for this project is whether there is sufficient evidence that the users of the various transportation components will generate sufficient revenue to support the development of the transportation components of the WCC.

Passenger Rail Service

The development of passenger rail services is a priority in Washington state and the Puget Sound Region. The greatest demand for passenger rail service is N-S in nature like the WCC corridor would provide. There are already existing intercity rail services that serve the region, including:

- Regular AMTRAK and the new AMTRAK "Cascades" service.
- "Sounder" service, the new and expanding commuter rail service provided by Sound Transit, and presently serving the corridor from Tacoma to Everett.

There are plans for improving passenger rail service within the region, including:

- Extending Sound Transit's commuter service south to Lakewood and increasing both the frequency and number of trains over the entire service area.

[8] *Chapter 5* - Construction and Right-of-Way Costs.
[9] Van Ness Feldman, August 2004

- Expanding the amount of AMTRAK "Cascades" service.
- The preliminary evaluation of other service north of Everett, east from the Seattle area, and even service parallel to existing ST north-south commuter rail.
- Completion of the first phase and expansion of the second phase of ST LRT service.

There is no shortage in plans and visions for improving passenger rail service in the region, including a plan for passenger rail service along the overall WCC alignment. In fact, much of the reasoning for this WCC Feasibility study was based on a report produced by the Washington State Association of Railway Passengers that builds the case for developing a rail and energy corridor along an alignment of existing railway infrastructure west of the Cascades[10].

However, passenger rail service does not contribute to the financial feasibility of the WCC as is currently defined. This is primarily based on the fact that passenger rail service is almost exclusively publicly subsidized. Average fare box recovery for passenger rail service in the US ranges between 30% and 60%[11], the rest of which is subsidized. As a local example, the AMTRAK Cascades service in Washington has a 40% farebox recovery. As a result, the private sector does not typically contribute significant financial resources towards the development of passenger rail service, nor does the private sector typically receive user fees or toll revenue from passenger rail service, expect where private sector contributes in ROW contributions, provides in-kind services, or receive revenues for trackage rights. And while there are private sector entities that operate rail services on behalf of public agencies, or control the routing of trains according to schedules, private sector involvement is not as the leading investor and financial sponsor. This is almost exclusively a government role.

Therefore, despite the strong evidence that N-S passenger rail service will likely be developed in the region, it would appear to add little to the financial feasibility of the WCC as it is currently defined.

Freight Rail Service

Freight rail service is almost exclusively a private sector business. Given that significant portions of the WCC follow existing freight rail infrastructure, we evaluated the feasibility of the private sector playing a role in developing the freight rail component of the WCC.

The Rail Freight Industry Players – There are two major rail freight carriers in the region, the Burlington Northern Santa Fe (BNSF) Railway Company and the Union Pacific (UP) Railway Company. Both companies serve markets to the north, south and east of the Puget Sound region. As a result, both companies have facilities that run N-S, primarily along the coast, as well as east towards major rail markets in the Midwest and the east coast.

Private Sector Driven Performance Requirements – These companies are responsible for the development of and investment in their own rail infrastructure and rolling stock, as well as the operations of the services. Both companies must meet the financial goals laid forth by investors

[10] Source: "The Cascade Foothills Corridor: A Commerce Corridor For Western Washington" The Washington Association of Railroad Passengers, October 2002.

[11] For 2002 the American Public Transit Association reports that for all Commuter Rail systems, 48% of operating expenses were covered by the fare box, 58% for Heavy Rail systems (e.g.. subways) and 29% for Light Rail systems.

and management. In addition, both serve customers with specific service requirements. Each railroad must meet the demands of their customers, or risk losing the business to the competitor or to the competing truck mode.

Investment Plans are More Market Driven Than Public Driven – Because of the competitive nature of the industry, railroad carriers focus most of their investment into the areas that help them best serve their customers' needs.

Rail Freight Markets are Predominantly East – The largest markets for freight rail traffic to/from the Puget Sound region are to the east. The two largest container ports generate the bulk of freight rail traffic, specifically intermodal container traffic. In fact, up to 70% of the port traffic through Tacoma and Seattle is intermodal. This traffic is carried to/from markets to the east, particularly the Midwest and Northeast on key east/west main lines.

Private Freight Investments are Focused on the East West Lines – The major investment plans of the two major railroads focus primarily on east/west mainlines, that serve their largest customer base and business lines. Barring any major change, these customers will continue to be the priority for the freight lines. Improvement in north/south capacity is a low priority for the railroads, with the exception of the north/south segments through the congested urban centers between Tacoma and Everett. The congestion related issues for the freight railroad along these urban segments are most prevalent near the intermodal yards and ports they serve. Any mainline capacity issues along these urban segments are mostly related to balancing freight capacity with intercity passenger services.

North/South Rail Capacity is Largely a Public Priority - This fact is evidenced by the approximately $300 million investment by the public sector (Sound Transit) into a public/private cooperation with the BNSF to improve capacity on their mainline from Seattle north to Everett in an effort to increase commuter passenger services to the north Puget Sound urban centers.

The Private Railroads are Not a Feasible Option for the WCC - Given these factors, it is clear that private railroad investment is not a feasible option to drive the development of the WCC.

Long Term Opportunities – As an aside, our analysis does point to two opportunities for the private railroads that the WCC could serve, specifically the need for improving capacity along the urban segments, and opportunities for staging freight inland, away from the ports and intermodal centers.

1. **Improving Capacity along the Urban Segments** – As is stated earlier, improving N-S passenger rail service is a very high public priority in the region. The current investment strategy for improving intercity passenger service is to utilize existing freight rail capacity. The WCC alignment runs along a mix of existing railroad infrastructure and old abandoned right-of-way to the east of the existing high priority freight lines through the urban centers. A long term strategy of shifting N-S freight rail traffic eastward along the WCC alignment would free up capacity along the freight lines through the urban centers and thereby improve the opportunity for passenger service. However this strategy is not a private sector driven strategy. It would require significant public investment to upgrade the railroad facilities along the WCC alignment, particularly from Tacoma north to the northern most east-wet BNSF line (Stevens Pass line) and to build an east-west connection on the southern end (Tacoma) of this freight by-pass.

2. **Inland Staging Center** – There is a desire by some of the ports and railroads in the Puget Sound to identify an inland freight staging point. This staging point will provide an interface between truck and rail, provide enough acreage for the development of major warehouse and cross-dock facilities, and will stage both international container traffic and domestic traffic, providing opportunities for trans-loading traffic. The ideal location would be at or near the major rail and highway corridors. The WCC might be an ideal method by which to help locate an inland staging area, because of its approach to setting aside major portions of ROW, its intersect between truck freight and rail freight, and its linkage to the major interstate corridors.[12]. It is important to note that the private sector is actively seeking a location for such a major load center, and the current focus is along the existing N-S urban/coastal rail lines. Once such a facility is developed, it will have a significant impact on land use that may take decades to play out.

Although this long term public policy alternative is not the focus of this Study, it at least warrants mention in this report. The focus of the Study, however, is determining whether there is the potential for users to pay for the development of the WCC, as defined by legislation. As stated earlier, the freight rail industry is not a feasible option for leading the development of the WCC, or contributing major resources towards its development, at this time.

Car Tolls

Tolls have been used to fund major road construction projects virtually from the onset of the growth in popularity of the automobile. Although not used wholesale to finance the entire national system, tolls have been used when public agencies do not have the resources to finance the facilities. Moreover, toll roads are typically developed as public/private ventures where the private sector is asked to play a variety of roles. A more detailed discussion of the roles that the private sector plays in the development of toll roads is provided in *Chapter 4 - Legal and Institutional Analysis* produced by this study.

Naturally, car tolls are also being viewed as an opportunity for financing the WCC. However, there are three major factors that present obstacles to car tolls financing the development of the WCC.

1. **Short Travel Patterns not Consistent with a Long Haul Corridor** – The financial feasibility of a car toll road is based on the amount of traffic it can attract, particularly from more congested or circuitous alternative routes against which it offers a significant enough advantage to warrant paying a toll. The densest traffic along the entire I-5 corridor is between Tacoma and Seattle, as well as south toward Olympia and north toward Everett. These are also the most congested segments. These corridor segments combined are shorter than the WCC as a whole. In addition, the bulk of the traffic along the congested segments is localized traffic, and does not travel over the entire route. In other words, the trips along these congested segments are short and are not consistent with the long haul nature of the WCC. The WCC is intended to have a limited number of access points along its entire length. The number of access points that would be made available to auto travelers along the densest segments (Tacoma to Seattle) would likely only be two. The bulk of trip patterns between these two points are well documented and understood to be

[12] Note that this report does not imply that the WCC would guarantee the success of an inland load center. The success of a load center is based on many factors, the bulk of which are market and operational driven factors. The WCC could offer an opportunity to bring all of these market and operational factors together.

shorter, requiring a far greater number of access points. Therefore, these local trips will likely not use the WCC. Since the local trips represent the largest share of the target traffic for the WCC, the feasibility of a car toll for the WCC concept, as it is currently defined, is at risk.

2. **The WCC is Too Far East Around the Major Urban and Suburban Centers** – The WCC is intended to by-pass the major urban centers, based on a desire to minimize community impacts. However, this approach actually undermines the feasibility of car tolls on the WCC. The bulk of the auto trips along the I-5 (that would be the primary target for diversion to the WCC,) are actually between the major urban and suburban areas. For these trips, using the WCC would be a circuitous alternative to the existing routes. Based on previous and ongoing work by WSDOT[13] the bulk of I-5 trips tend to use N-S routes that favor the western half of Snohomish, King and Pierce counties.
3. **Existing and Approved Transportation Investment Plans will Impact the WCC** – The agencies and jurisdictions (at all levels) along the I-5 corridor all have published plans to improve transportation service along the I-5 corridor. The 5 mile-wide WCC covers roughly 2,297 square miles through 6 Metropolitan Planning Organizations (MPO's). As the primary conduit for federal transportation funds, MPO's are uniquely positioned to guide transportation investment in their region. In addition, MPO's usually interface directly with the public, ensuring that their plans have already considered significant public input and are typically supported by the counties and communities they represent. In addition, the WCC travels through 6 counties, and hundreds of cities and towns, all of which have their own plans and funding to improve transportation service along the I-5. It is difficult to predict whether all of these plans will actually be fully funded, or to what degree they would improve service along I-5. However, the prospect of improved service along the I-5, particularly along the urban core where the bulk of the automotive traffic exists, may have a negative impact on the financial feasibility of car tolls along the WCC.

Having concluded that the WCC, as currently defined, is not a viable option for car tolls, it is important to stress that this conclusion is not a wholesale statement against the feasibility of toll based financing in the Puget Sound. This subject does warrant further analysis under a different scenario, particularly in the context of systems demand management. The use of pricing as a tool for systems demand management is a policy option that warrants serious investigation. This policy aside is not the focus of this Study, but at least warrants mention in this report. The focus of the Study, however, is to determine whether there is the potential for car users to pay for the development of the WCC, as defined by legislation.

[13] East King County Corridor Needs Study (CONEKC); WSDOT, Feb. 2000.

Truck Tolls

Of all the users identified thus far in this report, only the truck freight industry presents enough opportunity to warrant further analysis. The remainder of this report focuses on the analysis of the truck component of the WCC.

COULD THE TRUCKING COMPONENT OF THE CORRIDOR BE FINANCED BY PRIVATE SECTOR FUNDS?

Our analysis indicates that the trucking component of the WCC has a basis for further consideration. There are several factors that indicate the need for further evaluation. First, a preliminary evaluation of N-S truck trip patterns along the western corridor of the state indicates significant densities of N-S traffic that fit the characteristics of the WCC. Unlike the rail freight traffic patterns, the bulk of the truck traffic is N-S along the I-5 (which is not to say that E-W truck traffic, particularly along I-90, is not significant). Second, the trip characteristics are long haul in nature. In comparison to auto trips that are generally clustered around urban centers, a much larger proportionate share of truck trips are long-haul through the Puget Sound region, and would benefit from a by-pass around the region. Third, the trucking sector, as a whole, would be in support of improvements in N-S mainline capacity[14]. As compared to the energy sector, the trucking industry supports immediate and significant N-S improvements in capacity, but only for efforts that lower their transport costs along the I-5, increase asset utilization and productivity (increasing the number deliveries per day) and improve service to their customers. Fourth, preliminary revenue estimates produced by this report indicate that user based revenues could support a sizeable share of the truck-way development costs for the southern segments of the WCC.

Given the opportunity to position for Federal funds (specifically targeted at demonstration projects similar to the WCC) that would supplement the private funding, the truck component does add to the financial feasibility of the WCC, as it is currently defined. This is particularly true for the segments south of I-90, with the Chehalis to I-90 segment showing the greatest potential. However, feasibility will require some level of public subsidy.

The remainder of this report outlines the approach we used at estimating the level of potential traffic that could be diverted to the WCC, the costs associated with developing and operating the freight component, the range of potential revenue that may be generated through a user fee and the degree to which the revenue cover the costs (or don't cover the costs).

The first step is to estimate the demand for through truck traffic along the corridor.

Truck Freight Volume Development and Processing

Source of Data - Initial data for estimated annual truck trips, estimated annual freight tonnage, and estimated annual freight value was provided by Washington State University. The data was collected and tabulated as part of the Strategic Freight Transportation Analysis project, in cooperation with the Washington State Department of Transportation, the Association of Washington Cities, the Washington County Road Administration Board, the Washington State

[14] Based on industry interviews.

Association of Counties, the Freight Mobility Strategic Investment Board, and the United States Department of Transportation. Additional information about the project can be found at http://www.sfta.wsu.edu. The data is based on surveys conducted at WSDOT's truck count locations throughout the state. Therefore this data is essentially systems traffic and does not include an accurate assessment of local traffic. And because the focus of this Study is on systems traffic, this data is well suited for our analysis.

Determine Travel Patterns - Truck volume and freight flow data were tabulated into origin and destination couplets for a total of seven geographic areas, including five areas within Washington State, one area to include British Columbia and points north in Canada, and one area to include Oregon and points south into California, Arizona, and Mexico. The five geographic areas within Washington State were identified to collaborate with the study portions of the Washington Commerce Corridor project, and include North Puget Sound (Skagit and Whatcom Counties), Central Puget Sound (King, Pierce, Snohomish and Thurston Counties), Southwest Washington (Clark, Cowlitz and Lewis Counties), the Olympic Peninsula and Coastal Washington State, and Eastern Washington State. The data was summarized (where available) to show truck trips and freight volume flow to, from, and within each of the seven geographic areas.

Long Haul vs Short Haul Trips - The data provided by Washington State University was expanded by the consultant team in order to identify average annual daily truck trips and freight volumes. In order to distinguish long-haul trips from shorter distance trips (and respective tonnage and value flows), the truck and freight flow information was categorized as either between two adjacent geographic areas (titled "one-link only") or through one or more geographic areas (titled "through"). Truck trips and freight flow within each geographic area were not included.

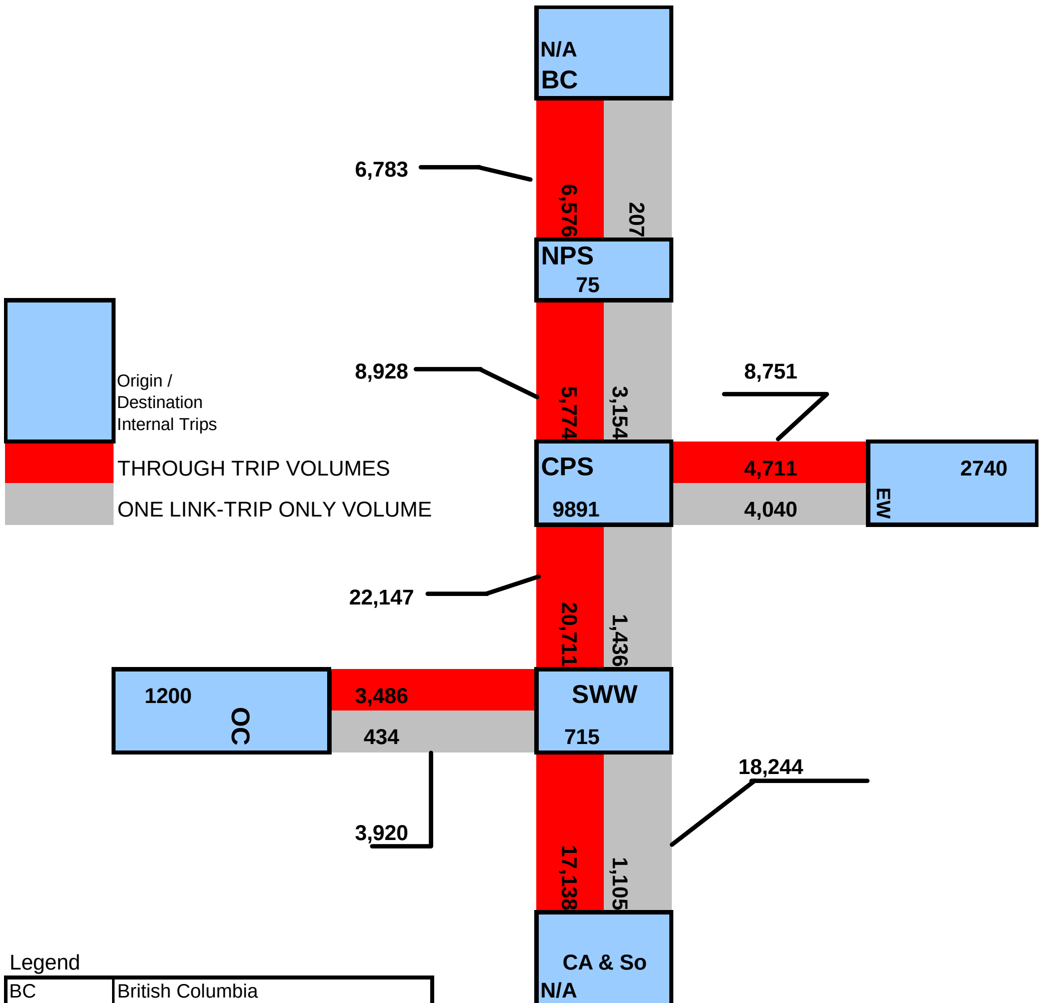
Forecast Future Traffic – Forecasts for the Year 2010 and Year 2020 for annual total and average annual daily truck and freight flow volumes were developed by applying a growth rate of 2.5% per year to the base origin-destination data. The growth rate was determined from an analysis of the Federal Highway Administration's Freight Analysis Framework (FAF) forecast data for freight flows within Washington State. The FAF data includes tonnage and value forecasts for freight within Washington State between the Year 1998 (existing date of the study) and Year 2010, and between Year 2010 and Year 2020. The growth rate determined from the FAF forecast data was applied to the base annual origin-destination data provided by Washington State University to develop forecast Year 2010 and Year 2020 volumes to, from, and within the seven geographic areas. In order to ensure consistency with existing truck and freight flow volumes, the forecast ratios for tonnage and value to truck trips were compared to the existing ratios. The comparison of forecast ratios of tonnage and value to truck trips to existing ratios showed growth rates consistent with an annual growth of 2.5% per year. The forecast Year 2010 and Year 2020 truck trip and freight flow information was then categorized into one-link only and through volumes, in a manner identical to that applied to existing truck volume and freight flow data.

Summary of Truck Flows along the Corridor

The following exhibits (6-1 through 6-5) provide estimates of the amount of through trips on the various segments of the corridor. The estimates shown in Exhibits 6-1, 6-2 and 6-3 are estimates of the number of truck trips on an average day (24 hours), based on annualized data, referred to as Average Annual Daily Truck Trips (AADTT). Note that trips between two adjacent geographic areas are titled "one-link only" (grey band) and are not considered as trips that are likely to be diverted to the WCC. Trips through one or more geographic areas (titled "through" in the red band) are more likely to be potentially diverted to the WCC.

Based on the truck trip data provided by the Strategic Freight Transportation Analysis project, there are sufficient through truck trips to support the development of a separate facility dedicated for trucks, particularly the segments south of I-90. On an average day, between eighteen to twenty two thousand trucks use the I-5 corridor between the central Puget Sound region and points south of the Washington/Oregon border. Of these trips, the large majority – over 90 percent - are through trips between the central Puget Sound and points south (shown as the red bands on the following three exhibits). This is compared to approximately half (50%) of the eight thousand E-W truck trips between the central Puget Sound and eastern Washington, being through trips. In other words, the N-S corridor is a far more significant truck trade corridor both in terms of sheer traffic volume and in terms of proportionate through (interstate and international) traffic. One contributing factor is NAFTA, but its influence is significantly smaller than the influence of domestic intercity traffic between the populated areas of the central Puget Sound and urban centers south. Between six and eight thousand trips occur north of the central Puget Sound region, the bulk of which are border crossing trips.

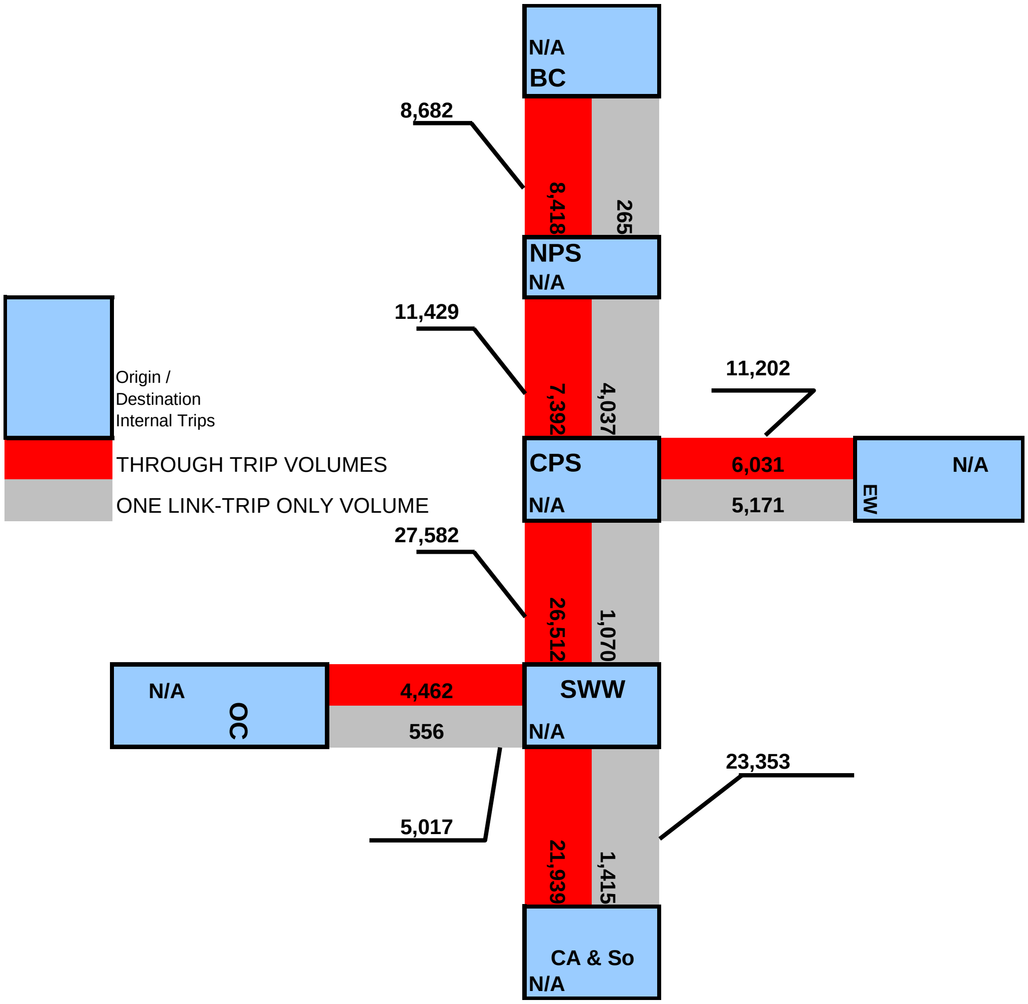
Exhibit 6-1
Distribution of Through Daily Truck Trips - Current



Legend

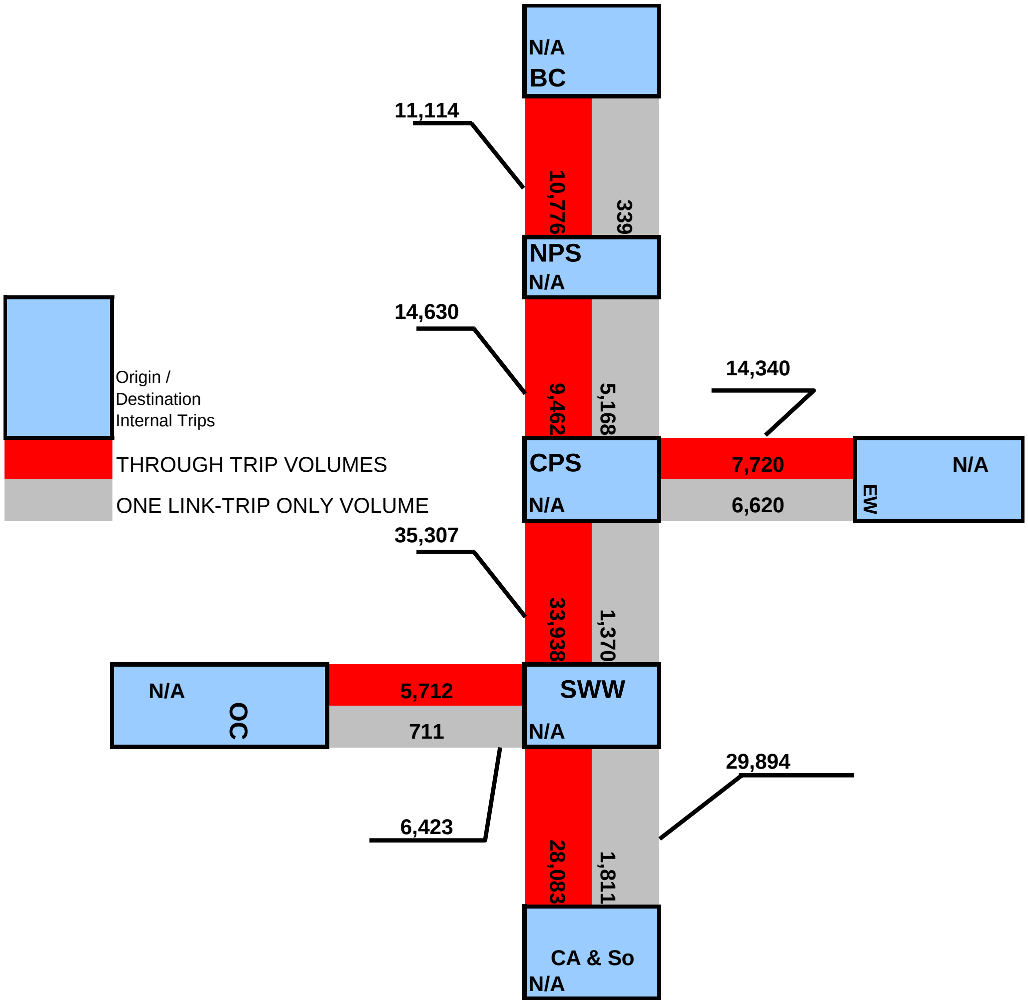
BC	British Columbia
NPS	Northern Puget Sound
CPS	Central Puget Sound
EW	Eastern Washington
SWW	Southwest Washington
OC	Olympic Peninsula
CA & So	California & Points South

Exhibit 6-2
Distribution of Through Daily Truck Trips - 2010



By the Year 2010, daily through truck trips on the I-5 corridor south of the central Puget Sound are expected to grow to between twenty two thousand AADTT and twenty six thousand AADTT, and seven to eight thousand AADTT along the segments north of the central Puget Sound.

Exhibit 6-3
Distribution of Through Daily Truck Trips - 2020



By the Year 2020 daily through truck trips along the I-5 corridor south of the central Puget Sound are expected to grow to between twenty eight thousand and thirty four thousand, and nine to eleven thousand along the segments north of the central Puget Sound.

Exhibits 6-4 and 6-5 below provide more detail including the annualized totals as well as the share of trips by origin/destination.

While the daily through volumes are significant enough to support a separate truck facility, the real basis for financial feasibility is whether the potential diverted traffic will generate sufficient revenue to cover the costs of the truck component of the WCC. The next step is to estimate the cost of developing the truck facility.

Exhibit 6-4
Detailed Truck Flow Estimates – Daily Trips

Estimated Existing AADT (Truck) Volumes by Segment

Link	Total Volume	One Link ONLY Volume	% One-Link	Through Volume	% Through	Origin / Destination: % In-State	% Out-of-State	% Canada	% CA & South
BC - NPS	6,783	207	3.05%	6,576	96.95%	N/A	N/A	57.87%	42.13%
NPS-CPS	8,928	3,154	35.33%	5,774	64.67%	57.59%	42.41%	28.22%	14.19%
CPS-EW	8,751	4,040	46.16%	4,711	53.84%	53.54%	46.46%	8.67%	37.79%
CPS-SWW	22,147	1,436	6.49%	20,711	93.51%	58.49%	41.51%	0.94%	40.57%
SWW-OC	3,920	434	11.07%	3,486	88.93%	75.69%	24.31%	18.40%	5.91%
SWW-CA & South	18,244	1,105	6.06%	17,138	93.94%	N/A	N/A	15.66%	84.34%

Estimated Year 2010 AADT (Truck) Volumes by Segment

Link	Total Volume	One Link ONLY Volume	% One-Link	Through Volume	% Through	Origin / Destination: % In-State	% Out-of-State	% Canada	% CA & South
BC - NPS	8,682	265	3.05%	8,418	96.95%	N/A	N/A	35.99%	42.13%
NPS-CPS	11,429	4,037	35.33%	7,392	64.67%	35.71%	42.41%	28.22%	14.19%
CPS-EW	11,202	5,171	46.16%	6,031	53.84%	31.66%	46.46%	8.67%	37.79%
CPS-SWW	27,582	1,070	3.88%	26,512	96.12%	37.63%	42.67%	0.97%	41.70%
SWW-OC	5,017	556	11.07%	4,462	88.93%	53.81%	24.31%	18.40%	5.91%
SWW-CA & South	23,353	1,415	6.06%	21,939	93.94%	N/A	N/A	15.66%	62.46%

Estimated Year 2020 AADT (Truck) Volumes by Segment

Link	Total Volume	One Link ONLY Volume	% One-Link	Through Volume	% Through	Origin / Destination: % In-State	% Out-of-State	% Canada	% CA & South
BC - NPS	11,114	339	3.05%	10,776	96.95%	N/A	N/A	18.89%	42.13%
NPS-CPS	14,630	5,168	35.33%	9,462	64.67%	18.61%	42.41%	28.22%	14.19%
CPS-EW	14,340	6,620	46.16%	7,720	53.84%	14.57%	46.46%	8.67%	37.79%
CPS-SWW	35,307	1,370	3.88%	33,938	96.12%	20.06%	42.67%	0.97%	41.70%
SWW-OC	6,423	711	11.07%	5,712	88.93%	36.71%	24.31%	18.40%	5.91%
SWW-CA & South	29,894	1,811	6.06%	28,083	93.94%	N/A	N/A	15.66%	45.36%

Exhibit 6-5
Detailed Truck Flow Estimates – Annual Volumes

Estimated Annual Volumes by Segment

Link	Total Volume	One Link ONLY Volume	% One-Link	Through Volume	% Through	Origin / Destination: % In-State	% Out-of-State	% Canada	% CA & South
BC - NPS	2,475,672	75,439	3.05%	2,400,233	96.95%	N/A	N/A	57.87%	42.13%
NPS-CPS	3,258,835	1,151,214	35.33%	2,107,621	64.67%	57.59%	42.41%	28.22%	14.19%
CPS-EW	3,194,162	1,474,545	46.16%	1,719,617	53.84%	53.54%	46.46%	8.67%	37.79%
CPS-SWW	8,083,826	524,283	6.49%	7,559,543	93.51%	58.49%	41.51%	0.94%	40.57%
SWW-OC	1,430,668	158,434	11.07%	1,272,234	88.93%	75.69%	24.31%	18.40%	5.91%
SWW-CA & South	6,658,943	403,441	6.06%	6,255,502	93.94%	N/A	N/A	15.66%	84.34%

Estimated Year 2010 Volumes by Segment

Link	Total Volume	One Link ONLY Volume	% One-Link	Through Volume	% Through	Origin / Destination: % In-State	% Out-of-State	% Canada	% CA & South
BC - NPS	3,169,069	96,568	3.05%	3,072,501	96.95%	N/A	N/A	57.87%	42.13%
NPS-CPS	4,171,584	1,473,651	35.33%	2,697,933	64.67%	89.85%	54.29%	28.22%	14.19%
CPS-EW	4,088,797	1,887,542	46.16%	2,201,255	53.84%	68.53%	59.47%	8.67%	37.79%
CPS-SWW	10,347,981	671,127	6.49%	9,676,854	93.51%	74.87%	53.14%	0.94%	40.57%
SWW-OC	1,831,376	202,809	11.07%	1,628,567	88.93%	96.88%	31.12%	18.40%	5.91%
SWW-CA & South	8,524,010	516,439	6.06%	8,007,571	93.94%	N/A	N/A	15.66%	84.34%

Estimated Year 2020 Volumes by Segment

Link	Total Volume	One Link ONLY Volume	% One-Link	Through Volume	% Through	Origin / Destination: % In-State	% Out-of-State	% Canada	% CA & South
BC - NPS	4,056,677	123,616	3.05%	3,933,061	96.95%	N/A	N/A	57.87%	42.13%
NPS-CPS	5,339,981	1,886,398	35.33%	3,453,582	64.67%	105.55%	49.51%	28.22%	14.19%
CPS-EW	5,234,006	2,416,214	46.16%	2,817,793	53.84%	119.04%	8.97%	8.67%	37.79%
CPS-SWW	13,246,290	859,099	6.49%	12,387,191	93.51%	124.48%	3.53%	0.94%	40.57%
SWW-OC	2,344,316	259,613	11.07%	2,084,704	88.93%	4.23%	123.78%	18.40%	5.91%
SWW-CA & South	10,911,453	661,085	6.06%	10,250,368	93.94%	N/A	N/A	15.66%	84.34%

Overview of Cost Estimates for Truck Scenarios

Based on the costing methodology outlined in the previous chapter (*Chapter 5 - Construction and ROW Costs*), a series of estimates were developed for three freight specific scenarios. The freight scenarios are slight variations of the scenarios developed in Chapter 5.

1) **4 Truck Lanes** - The first freight scenario includes a four-lane truck only facility (two lanes in each direction) for the entire corridor along the same alignment as Scenario 1 in the previous chapter (the baseline corridor alignment).
2) **2 Truck Lanes** - The second freight scenario includes a two-lane truck only facility (one lane in each direction) for the entire corridor along the same alignment as Scenario 1 in the previous chapter (the baseline corridor alignment). This scenario also includes an intermittent third passing lane alternating between directional lanes assumed to cover approximately one third of the length of the corridor.
3) **2 Truck Lanes with Rail** - The third freight scenario includes a two-lane truck only facility (same as previous scenario), but includes additional rail capacity (one rail line) for the entire corridor along the same alignment as Scenario 1 in the previous chapter (the baseline corridor). The purpose of this scenario is to test the financial feasibility of piggybacking rail investments in conjunction with the truck investments, the former paid for in part through the truck user revenues. An example of where this type of multimodal approach is being proposed elsewhere is the proposed *Stars Solution* public/private truck development project along Interstate 81 in Virginia.

Exhibit 6-6 summarizes the approximate length of each of the super segments (between major E-W connections) for the freight scenarios. The overall length of the corridor is 276 miles, which is consistent with the upper percentile length for toll facilities that charge truck tolls around the country. The length of the Chehalis to I-90 segment is consistent with the mid range length for toll facilities that charge truck tolls elsewhere.

Exhibit 6-6
Approximate Length for Each Truck Segment

Distance (miles)			
	Alternative		
Corridor Segment	**4 Truck Lanes**	**2 Truck Lanes**	**2 Truck Lanes w/ Rail**
SR 20 to Canada	28	28	28
SR 2 to SR 20	55	55	55
I-90 to SR 2	32	32	32
Chehalis to I-90	102	102	102
Vancouver to Chehalis	60	60	60
Total	**276**	**276**	**276**

The following exhibits summarize the cost estimates for each of the three freight scenarios. Not surprisingly, the four truck lane scenario is the most expensive at $17 billion, followed by the two truck lanes with rail at $15.7 billion. The two lane truck scenario has the lowest price tag at $12 billion. Note that these costs are slightly different from the truck related costs outlined in Chapter

5 due to the different ROW assumptions. The net ROW consumed by the truck portion for the comprehensive multi-user corridor (Chapter 5) is slightly less than the ROW consumed for the freight only scenario outlined in this chapter (6).

Exhibit 6-7
Cost Estimates for Developing the Truck Component of the WCC
(Millions of 2003 $)

Total Costs ($Millions - 2003)			
		Alternative	
Corridor Segment	**4 Truck Lanes**	**2 Truck Lanes**	**2 Truck Lanes w/ Rail**
Rt 20 to Canada	1,445	1,128	1,968
Rt 2 to Rt 20	1,946	1,338	1,693
I-90 to Rt 2	2,015	1,527	1,713
Chehalis to I-90	6,213	4,736	5,842
Vancouver to Chehalis	4,359	2,882	3,702
Subtotal ($M)	15,978	11,612	14,919
ITS	50	50	50
Contingency	1,676	1,106	1,512
Total ($M)	**17,705**	**12,768**	**16,482**

Exhibit 6-8
Detailed Breakdown of Cost for Each Segment and Scenario (Millions of 2003 $)

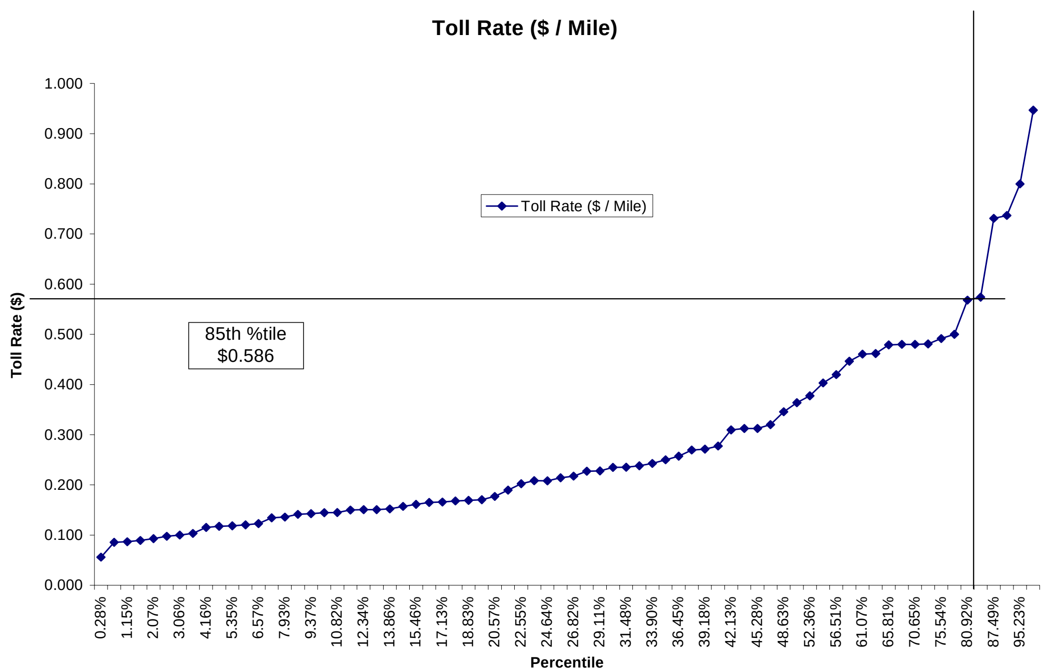
	Segment Cost			Annual Route Maintenance		
Study Segment	**4 Truck Lanes**	**2 Truck Lanes**	**2 Truck Lanes w/ Rail**	**4 Truck Lanes**	**2 Truck Lanes**	**2 Truck Lanes w/ Rail**
Rt 20 to Canada	$1,445	$1,128	$1,968			
ITS Capital Cost by Segment	*$5*	*$5*	*$7*			
Construction Contigency by Segment	*$152*	*$107*	*$200*			
Segment Subtotal	$1,601	$1,241	$2,174	$0.6	$0.7	$0.9
I-90 to Rt 20	$3,961	$2,865	$3,406			
ITS Capital Cost by Segment	*$12*	*$12*	*$11*			
Construction Contigency by Segment	*$416*	*$273*	*$345*			
Segment Subtotal	$4,389	$3,151	$3,763	$1.8	$1.8	$1.6
Chehalis to I-90	$6,213	$4,736	$5,842			
ITS Capital Cost by Segment	*$20*	*$21*	*$20*			
Construction Contigency by Segment	*$652*	*$451*	*$592*			
Segment Subtotal	$6,885	$5,208	$6,454	$2.8	$2.9	$2.8
Vancouver to Chehalis	*$4,359*	*$2,882*	*$3,702*			
ITS Capital Cost by Segment	*$14*	*$12*	*$12*			
Construction Contigency by Segment	*$457*	*$274*	*$375*			
Segment Subtotal	$4,830	$3,169	$4,090	$2.0	$1.8	$1.8
Subtotal of ITS Capital Cost			*$50*			
Subtotal of Construction Contigency			*$1,512*			
Alternative Total	**$17,705**	**$12,768**	**$16,482**	**$7.2**	**$7.2**	**$7.2**

Estimating a Potential Toll Rate Scenario

This section outlines a truck toll rate scenario for the WCC. It is important to note that the methods used herein are not at a level typically associated with investment grade studies. The revenue estimates provided by this study are preliminary. They are policy level estimates of the revenue generation potential of the WCC under a predetermined set of assumptions regarding toll rates, and truck usage and diversion rates. There are a wide range of variables that could affect the accuracy of the truck revenue estimates developed herein. By design of the scope and budget, and based on the intent of the study, the toll revenue scenario analysis methods used for this Study did not deploy industry recognized travel demand models whereby the effect of pricing on travel behavior is fully analyzed, or whereby detailed price elasticity algorithms are deployed. The revenue estimates produced herein are not statistically accurate enough to support the implementation of the WCC, without more detailed traffic and toll revenue forecast analyses, which would preferably be followed by a peer review. That said, the methods used herein are robust enough for this specific policy level study.

The basis for the toll rate ranges used for this study is an analysis of the truck toll rates used elsewhere nationally[15]. The range of rates currently deployed elsewhere were plotted out to identify the 85 percentile rate which is assumed to be the higher end rate. The 85 percentile rate was used as the maximum rate scenario for the WCC, with other rate scenarios at equal ranges below this maximum set rate. The graph below shows that the rates applied elsewhere range between $0.05 per mile to as high a $0.9 per mile.

Exhibit 6-9
Graph Showing Range of Truck Toll Rates at Other Locations



[15] Source: Wilbur Smith Associates; TFT Division.

The high end for the WCC was pegged at $0.586 per mile (the 85 percentile rate from elsewhere). From this base (high end) rate, a set of four rates were calculated, specifically at 25, 50, 75 and 100% of the base high end pegged rate. As is shown below, the rates used for the WCC truck toll revenue scenario analysis are $0.15, $0.30, $0.45 and $0.6 per mile, respectively.

Exhibit 6-10
Table with Range of Truck Toll Rates Applied to the WCC
(Based on Rates at Other Locations)

	Rate ($)
Base:	**$0.600**

%Tile	Rate ($)
100th	$0.600
75th	$0.450
50th	$0.300
25th	$0.150

Truck Diversion Rate Assumptions

Under a scenario whereby the truck component of the WCC is developed, it is assumed that some level of truck traffic would be diverted to use some combination of the WCC truck route segments. Without the use of a detailed travel demand model, it is virtually impossible to accurately estimate the number of trucks that would actually use the WCC. Therefore, for purposes of this study, a set of diversion rates are applied, specifically 25%, 50%, 75% and 100% of through trucks currently and forecasted to travel N-S along the I-5 corridor. Many of the data exhibits presented herein are shown at an assumed 50% diversion rate, whereby at least half of the through truck trips are assumed to be diverted to the WCC. However, some exhibits do show the potential toll revenue for all four diversion scenarios.

Estimating Revenue from Truck Tolls

The truck toll rates were applied to the truck volumes for each of the diversion scenarios so as to estimate the potential truck toll revenues. The following exhibits summarize the potential toll revenue for the truck component of the WCC, for each of the four toll rate scenarios, under a 50% diversion assumption. The revenue under each toll rate scenario would be higher under a higher truck diversion (to the WCC) rate, and vice versa.

With the 25 percentile toll rate of $0.15 per mile the potential annual revenue is $100 million at current truck volumes, and climbs to $170 million by 2020. As can be expected, the longer segments generate the greatest revenue. The 100 percentile toll rate of $0.60 is estimated to generate over $410 million with current truck volumes and just over $680 million by 2020.

Exhibit 6-11
Estimate of Truck Toll Revenue (Millions of 2003 $)
50% Diversion from Existing Facilities, at 25 Percentile Toll Rate

Toll Rate:	**0.150**	**$/mile**
% Diversion:	**50%**	**% of truck trips remaining on non-toll facility**

Estimated Existing AADT (Truck) Volumes by Segment

Link	Total Volume	One Link ONLY Volume	% One-Link	Through Volume	Diverted Volume	% Through	Link Distance (miles)	Toll Rate ($ / Mile)	Toll Revenue ($/day)	Yearly Revenue ($)
Rt 20 to Canada	6,783	207	3.05%	6,576	3,288	96.95%	28.3	0.15	13,977	5,101,695
I-90 to Rt 20	8,928	3,154	35.33%	5,774	2,887	64.67%	86.2	0.15	37,309	13,617,866
Chehalis to I-90	22,147	1,436	6.49%	20,711	10,356	93.51%	102.1	0.15	158,626	57,898,540
Vancouver to Chehalis	18,244	1,105	6.06%	17,138	8,569	93.94%	59.6	0.15	76,570	27,948,019
Total									286,483	104,566,120

Estimated Year 2010 AADT (Truck) Volumes by Segment

Link	Total Volume	One Link ONLY Volume	% One-Link	Through Volume	Diverted Volume	% Through	Link Distance (miles)	Toll Rate ($ / Mile)	Toll Revenue ($/day)	Yearly Revenue ($)
Rt 20 to Canada	8,682	265	3.05%	8,418	4,209	96.95%	28.3	0.15	17,892	6,530,601
I-90 to Rt 20	11,429	4,037	35.33%	7,392	3,696	64.67%	86.2	0.15	47,759	17,432,020
Chehalis to I-90	27,582	1,070	3.88%	26,512	13,256	96.12%	102.1	0.15	203,055	74,115,026
Vancouver to Chehalis	23,353	1,415	6.06%	21,939	10,969	93.94%	59.6	0.15	98,016	35,775,827
Total									366,722	133,853,474

Estimated Year 2020 AADT (Truck) Volumes by Segment

Link	Total Volume	One Link ONLY Volume	% One-Link	Through Volume	Diverted Volume	% Through	Link Distance (miles)	Toll Rate ($ / Mile)	Toll Revenue ($/day)	Yearly Revenue ($)
Rt 20 to Canada	11,114	339	3.05%	10,776	5,388	96.95%	28.3	0.15	22,903	8,359,722
I-90 to Rt 20	14,630	5,168	35.33%	9,462	4,731	64.67%	86.2	0.15	61,136	22,314,459
Chehalis to I-90	35,307	1,370	3.88%	33,938	16,969	96.12%	102.1	0.15	259,927	94,873,499
Vancouver to Chehalis	29,894	1,811	6.06%	28,083	14,042	93.94%	59.6	0.15	125,469	45,796,084
Total									469,435	171,343,764

Exhibit 6-12
Estimate of Truck Toll Revenue (Millions of 2003 $)
50% Diversion from Existing Facilities, at 50 Percentile Toll Rate

Toll Rate: 0.300 **$/mile**
% Diversion: 50% **% of truck trips remaining on non-toll facility**

Estimated Existing AADT (Truck) Volumes by Segment

Link	Total Volume	One Link ONLY Volume	% One-Link	Through Volume	Diverted Volume	% Through	Link Distance (miles)	Toll Rate ($ / Mile)	Toll Revenue ($/day)	Yearly Revenue ($)
Rt 20 to Canada	6,783	207	3.05%	6,576	3,288	96.95%	28.3	0.3	27,954	10,203,390
I-90 to Rt 20	8,928	3,154	35.33%	5,774	2,887	64.67%	86.2	0.3	74,618	27,235,732
Chehalis to I-90	22,147	1,436	6.49%	20,711	10,356	93.51%	102.1	0.3	317,252	115,797,080
Vancouver to Chehalis	18,244	1,105	6.06%	17,138	8,569	93.94%	59.6	0.3	153,140	55,896,038
Total									572,965	209,132,241

Estimated Year 2010 AADT (Truck) Volumes by Segment

Link	Total Volume	One Link ONLY Volume	% One-Link	Through Volume	Diverted Volume	% Through	Link Distance (miles)	Toll Rate ($ / Mile)	Toll Revenue ($/day)	Yearly Revenue ($)
Rt 20 to Canada	8,682	265	3.05%	8,418	4,209	96.95%	28.3	0.3	35,784	13,061,202
I-90 to Rt 20	11,429	4,037	35.33%	7,392	3,696	64.67%	86.2	0.3	95,518	34,864,040
Chehalis to I-90	27,582	1,070	3.88%	26,512	13,256	96.12%	102.1	0.3	406,110	148,230,052
Vancouver to Chehalis	23,353	1,415	6.06%	21,939	10,969	93.94%	59.6	0.3	196,032	71,551,654
Total									733,444	267,706,949

Estimated Year 2020 AADT (Truck) Volumes by Segment

Link	Total Volume	One Link ONLY Volume	% One-Link	Through Volume	Diverted Volume	% Through	Link Distance (miles)	Toll Rate ($ / Mile)	Toll Revenue ($/day)	Yearly Revenue ($)
Rt 20 to Canada	11,114	339	3.05%	10,776	5,388	96.95%	28.3	0.3	45,807	16,719,443
I-90 to Rt 20	14,630	5,168	35.33%	9,462	4,731	64.67%	86.2	0.3	122,271	44,628,919
Chehalis to I-90	35,307	1,370	3.88%	33,938	16,969	96.12%	102.1	0.3	519,855	189,746,998
Vancouver to Chehalis	29,894	1,811	6.06%	28,083	14,042	93.94%	59.6	0.3	250,937	91,592,167
Total									938,870	342,687,528

Exhibit 6-13
Estimate of Truck Toll Revenue (Millions of 2003 $)
50% Diversion from Existing Facilities, at 75 Percentile Toll Rate

Toll Rate:	**0.450**	**$/mile**
% Diversion:	**50%**	**% of truck trips remaining on non-toll facility**

Estimated Existing AADT (Truck) Volumes by Segment

Link	Total Volume	One Link ONLY Volume	% One-Link	Through Volume	Diverted Volume	% Through	Link Distance (miles)	Toll Rate ($ / Mile)	Toll Revenue ($/day)	Yearly Revenue ($)
Rt 20 to Canada	6,783	207	3.05%	6,576	3,288	96.95%	28.3	0.45	41,932	15,305,086
I-90 to Rt 20	8,928	3,154	35.33%	5,774	2,887	64.67%	86.2	0.45	111,928	40,853,599
Chehalis to I-90	22,147	1,436	6.49%	20,711	10,356	93.51%	102.1	0.45	475,878	173,695,620
Vancouver to Chehalis	18,244	1,105	6.06%	17,138	8,569	93.94%	59.6	0.45	229,710	83,844,057
Total									859,448	313,698,361

Estimated Year 2010 AADT (Truck) Volumes by Segment

Link	Total Volume	One Link ONLY Volume	% One-Link	Through Volume	Diverted Volume	% Through	Link Distance (miles)	Toll Rate ($ / Mile)	Toll Revenue ($/day)	Yearly Revenue ($)
Rt 20 to Canada	8,682	265	3.05%	8,418	4,209	96.95%	28.3	0.45	53,676	19,591,804
I-90 to Rt 20	11,429	4,037	35.33%	7,392	3,696	64.67%	86.2	0.45	143,277	52,296,060
Chehalis to I-90	27,582	1,070	3.88%	26,512	13,256	96.12%	102.1	0.45	609,165	222,345,078
Vancouver to Chehalis	23,353	1,415	6.06%	21,939	10,969	93.94%	59.6	0.45	294,048	107,327,482
Total									1,100,166	401,560,423

Estimated Year 2020 AADT (Truck) Volumes by Segment

Link	Total Volume	One Link ONLY Volume	% One-Link	Through Volume	Diverted Volume	% Through	Link Distance (miles)	Toll Rate ($ / Mile)	Toll Revenue ($/day)	Yearly Revenue ($)
Rt 20 to Canada	11,114	339	3.05%	10,776	5,388	96.95%	28.3	0.45	68,710	25,079,165
I-90 to Rt 20	14,630	5,168	35.33%	9,462	4,731	64.67%	86.2	0.45	183,407	66,943,378
Chehalis to I-90	35,307	1,370	3.88%	33,938	16,969	96.12%	102.1	0.45	779,782	284,620,498
Vancouver to Chehalis	29,894	1,811	6.06%	28,083	14,042	93.94%	59.6	0.45	376,406	137,388,251
Total									1,408,305	514,031,292

Exhibit 6-14
Estimate of Truck Toll Revenue (Millions of 2003 $)
50% Diversion from Existing Facilities, at 100 Percentile Toll Rate

Toll Rate:	**0.600**	**$/mile**
% Diversion:	**50%**	**% of truck trips remaining on non-toll facility**

Estimated Existing AADT (Truck) Volumes by Segment

Link	Total Volume	One Link ONLY Volume	% One-Link	Through Volume	Diverted Volume	% Through	Link Distance (miles)	Toll Rate ($ / Mile)	Toll Revenue ($/day)	Yearly Revenue ($)
Rt 20 to Canada	6,783	207	3.05%	6,576	3,288	96.95%	28.3	0.6	55,909	20,406,781
I-90 to Rt 20	8,928	3,154	35.33%	5,774	2,887	64.67%	86.2	0.6	149,237	54,471,465
Chehalis to I-90	22,147	1,436	6.49%	20,711	10,356	93.51%	102.1	0.6	634,505	231,594,159
Vancouver to Chehalis	18,244	1,105	6.06%	17,138	8,569	93.94%	59.6	0.6	306,280	111,792,076
Total									1,145,930	418,264,481

Estimated Year 2010 AADT (Truck) Volumes by Segment

Link	Total Volume	One Link ONLY Volume	% One-Link	Through Volume	Diverted Volume	% Through	Link Distance (miles)	Toll Rate ($ / Mile)	Toll Revenue ($/day)	Yearly Revenue ($)
Rt 20 to Canada	8,682	265	3.05%	8,418	4,209	96.95%	28.3	0.6	71,568	26,122,405
I-90 to Rt 20	11,429	4,037	35.33%	7,392	3,696	64.67%	86.2	0.6	191,036	69,728,080
Chehalis to I-90	27,582	1,070	3.88%	26,512	13,256	96.12%	102.1	0.6	812,219	296,460,104
Vancouver to Chehalis	23,353	1,415	6.06%	21,939	10,969	93.94%	59.6	0.6	392,064	143,103,309
Total									1,466,887	535,413,898

Estimated Year 2020 AADT (Truck) Volumes by Segment

Link	Total Volume	One Link ONLY Volume	% One-Link	Through Volume	Diverted Volume	% Through	Link Distance (miles)	Toll Rate ($ / Mile)	Toll Revenue ($/day)	Yearly Revenue ($)
Rt 20 to Canada	11,114	339	3.05%	10,776	5,388	96.95%	28.3	0.6	91,613	33,438,887
I-90 to Rt 20	14,630	5,168	35.33%	9,462	4,731	64.67%	86.2	0.6	244,542	89,257,838
Chehalis to I-90	35,307	1,370	3.88%	33,938	16,969	96.12%	102.1	0.6	1,039,710	379,493,997
Vancouver to Chehalis	29,894	1,811	6.06%	28,083	14,042	93.94%	59.6	0.6	501,875	183,184,334
Total									1,877,740	685,375,055

Comparing Costs against Revenues

In order to determine whether the potential revenue streams can cover the costs associated with developing the truck elements of the corridor, the development and maintenance costs are annualized into expenditure streams that correlate with the revenue streams. Development related expenditures are assumed to occur over a 5 year period, equally distributed, through 2010. Maintenance costs are streamed evenly over a 20 year analysis period through 2030. Revenues are streamed over a 20 year period, starting in 2010. The annual expenditure and revenue streams are present valued using a 5.5% interest rate. The present value of the expenditure streams are then deducted from the present value of the revenue streams to determine the net present value (NPV). A positive NPV implies that the present value of the 20 year revenue stream is greater than the present value of the respective expenditure streams. A negative NPV implies that the revenues do not cover the costs. A positive NPV would indicate a strong basis for feasibility. A negative NPV appears to add little to the financial feasibility of the truck component of the WCC as it is currently defined.

The tables shown in Exhibits 6-15, 6-16 and 6-17 are detailed NPV pro-forma tables for each of the three truck scenarios. Note that the present value for the expenditure and the revenue will be lower than the comparable cost and revenue tables shown in earlier exhibits, due to discounting for the cost of borrowing money.

Exhibit 6-15
Comparing Costs and Revenues for 4 Truck Lanes Millions of 2003 $)
50% Diversion of Through Trucks

Period	Rt 20 to Canada					I-90 to Rt 20					Chehalis to I-90				
	Expend-itures ($)	Revenue At Various Toll Rate ($/mile)				Expend-itures ($)	Revenue ($) At Various Toll Rate ($/mile)				Expend-itures ($)	Revenue ($) At Various Toll Rate ($/mile)			
		$0.15	$0.30	$0.45	$0.60		$0.15	$0.30	$0.45	$0.60		$0.15	$0.30	$0.45	$0.60
2005	320.2					877.8					1,377.0				
2006	320.2					877.8					1,377.0				
2007	320.2					877.8					1,377.0				
2008	320.2					877.8					1,377.0				
2009	320.2					877.8					1,377.0				
2010	0.6	6.5	13.1	19.6	26.1	1.8	17.4	34.9	52.3	69.7	2.8	74.1	148.2	222.3	296.5
2011	0.6	6.7	13.4	20.1	26.9	1.8	17.9	35.8	53.8	71.7	2.8	76.2	152.4	228.6	304.8
2012	0.6	6.9	13.8	20.7	27.6	1.8	18.4	36.8	55.2	73.6	2.8	78.3	156.5	234.8	313.1
2013	0.6	7.1	14.2	21.2	28.3	1.8	18.9	37.8	56.7	75.6	2.8	80.3	160.7	241.0	321.4
2014	0.6	7.3	14.5	21.8	29.0	1.8	19.4	38.8	58.2	77.5	2.8	82.4	164.8	247.3	329.7
2015	0.6	7.4	14.9	22.3	29.8	1.8	19.9	39.7	59.6	79.5	2.8	84.5	169.0	253.5	338.0
2016	0.6	7.6	15.3	22.9	30.5	1.8	20.4	40.7	61.1	81.4	2.8	86.6	173.1	259.7	346.3
2017	0.6	7.8	15.6	23.4	31.2	1.8	20.8	41.7	62.5	83.4	2.8	88.6	177.3	265.9	354.6
2018	0.6	8.0	16.0	24.0	32.0	1.8	21.3	42.7	64.0	85.4	2.8	90.7	181.4	272.2	362.9
2019	0.6	8.2	16.4	24.5	32.7	1.8	21.8	43.7	65.5	87.3	2.8	92.8	185.6	278.4	371.2
2020	0.6	8.4	16.7	25.1	33.4	1.8	22.3	44.6	66.9	89.3	2.8	94.9	189.7	284.6	379.5
2021	0.6	8.5	17.1	25.6	34.2	1.8	22.8	45.6	68.4	91.2	2.8	96.9	193.9	290.8	387.8
2022	0.6	8.7	17.5	26.2	34.9	1.8	23.3	46.6	69.9	93.2	2.8	99.0	198.1	297.1	396.1
2023	0.6	8.9	17.8	26.7	35.6	1.8	23.8	47.6	71.3	95.1	2.8	101.1	202.2	303.3	404.4
2024	0.6	9.1	18.2	27.3	36.4	1.8	24.3	48.5	72.8	97.1	2.8	103.2	206.4	309.5	412.7
2025	0.6	9.3	18.5	27.8	37.1	1.8	24.8	49.5	74.3	99.0	2.8	105.3	210.5	315.8	421.0
2026	0.6	9.5	18.9	28.4	37.8	1.8	25.2	50.5	75.7	101.0	2.8	107.3	214.7	322.0	429.3
2027	0.6	9.6	19.3	28.9	38.6	1.8	25.7	51.5	77.2	102.9	2.8	109.4	218.8	328.2	437.6
2028	0.6	9.8	19.6	29.5	39.3	1.8	26.2	52.4	78.7	104.9	2.8	111.5	223.0	334.4	445.9
2029	0.6	10.0	20.0	30.0	40.0	1.8	26.7	53.4	80.1	106.8	2.8	113.6	227.1	340.7	454.2
2030	0.6	10.2	20.4	30.6	40.8	1.8	27.2	54.4	81.6	108.8	2.8	115.6	231.3	346.9	462.5
PV	**1,373**	**98**	**197**	**295**	**393**	**3,765**	**262**	**525**	**787**	**1,050**	**5,906**	**1,116**	**2,231**	**3,347**	**4,462**
NPV		**-1,275**	**-1,177**	**-1,078**	**-980**		**-3,503**	**-3,240**	**-2,978**	**-2,716**		**-4,791**	**-3,675**	**-2,559**	**-1,444**

Period	Vancouver to Chehalis					Entire Corridor				
	Expend-itures ($)	Revenue ($) At Various Toll				Expend-itures ($)	Revenue ($) At Various Toll Rate			
		$0.15	$0.30	$0.45	$0.60		$0.15	$0.30	$0.45	$0.60
2005	966.0					3,540.9				
2006	966.0					3,540.9				
2007	966.0					3,540.9				
2008	966.0					3,540.9				
2009	966.0					3,540.9				
2010	2.0	35.8	71.6	107.3	143.1	7.2	133.9	267.7	401.6	535.4
2011	2.0	36.8	73.6	110.3	147.1	7.2	137.6	275.2	412.8	550.4
2012	2.0	37.8	75.6	113.3	151.1	7.2	141.4	282.7	424.1	565.4
2013	2.0	38.8	77.6	116.3	155.1	7.2	145.1	290.2	435.3	580.4
2014	2.0	39.8	79.6	119.4	159.1	7.2	148.8	297.7	446.5	595.4
2015	2.0	40.8	81.6	122.4	163.1	7.2	152.6	305.2	457.8	610.4
2016	2.0	41.8	83.6	125.4	167.2	7.2	156.3	312.7	469.0	625.4
2017	2.0	42.8	85.6	128.4	171.2	7.2	160.1	320.2	480.3	640.4
2018	2.0	43.8	87.6	131.4	175.2	7.2	163.8	327.7	491.5	655.4
2019	2.0	44.8	89.6	134.4	179.2	7.2	167.6	335.2	502.8	670.4
2020	2.0	45.8	91.6	137.4	183.2	7.2	171.3	342.7	514.0	685.4
2021	2.0	46.8	93.6	140.4	187.2	7.2	175.1	350.2	525.3	700.4
2022	2.0	47.8	95.6	143.4	191.2	7.2	178.8	357.7	536.5	715.4
2023	2.0	48.8	97.6	146.4	195.2	7.2	182.6	365.2	547.8	730.4
2024	2.0	49.8	99.6	149.4	199.2	7.2	186.3	372.7	559.0	745.4
2025	2.0	50.8	101.6	152.4	203.2	7.2	190.1	380.2	570.3	760.4
2026	2.0	51.8	103.6	155.4	207.2	7.2	193.8	387.7	581.5	775.4
2027	2.0	52.8	105.6	158.4	211.2	7.2	197.6	395.2	592.8	790.3
2028	2.0	53.8	107.6	161.4	215.2	7.2	201.3	402.7	604.0	805.3
2029	2.0	54.8	109.6	164.4	219.3	7.2	205.1	410.2	615.3	820.3
2030	2.0	55.8	111.6	167.4	223.3	7.2	208.8	417.7	626.5	835.3
PV	**4,143**	**539**	**1,077**	**1,616**	**2,154**	**15,188**	**2,015**	**4,030**	**6,044**	**8,059**
NPV		**-3,605**	**-3,066**	**-2,528**	**-1,989**		**-13,173**	**-11,159**	**-9,144**	**-7,129**

Exhibit 6-16
Comparing Costs and Revenues for 2 Truck Lanes (Millions of 2003 $)
50% Diversion of Through Trucks

Period	Rt 20 to Canada					I-90 to Rt 20					Chehalis to I-90				
	Expend-itures ($)	Revenue At Various Toll Rate ($/mile)				Expend-itures ($)	Revenue ($) At Various Toll Rate ($/mile)				Expend-itures ($)	Revenue ($) At Various Toll Rate ($/mile)			
		$0.15	$0.30	$0.45	$0.60		$0.15	$0.30	$0.45	$0.60		$0.15	$0.30	$0.45	$0.60
2005	248.1					630.2					1,041.6				
2006	248.1					630.2					1,041.6				
2007	248.1					630.2					1,041.6				
2008	248.1					630.2					1,041.6				
2009	248.1					630.2					1,041.6				
2010	0.7	6.5	13.1	19.6	26.1	1.8	17.4	34.9	52.3	69.7	2.9	74.1	148.2	222.3	296.5
2011	0.7	6.7	13.4	20.1	26.9	1.8	17.9	35.8	53.8	71.7	2.9	76.2	152.4	228.6	304.8
2012	0.7	6.9	13.8	20.7	27.6	1.8	18.4	36.8	55.2	73.6	2.9	78.3	156.5	234.8	313.1
2013	0.7	7.1	14.2	21.2	28.3	1.8	18.9	37.8	56.7	75.6	2.9	80.3	160.7	241.0	321.4
2014	0.7	7.3	14.5	21.8	29.0	1.8	19.4	38.8	58.2	77.5	2.9	82.4	164.8	247.3	329.7
2015	0.7	7.4	14.9	22.3	29.8	1.8	19.9	39.7	59.6	79.5	2.9	84.5	169.0	253.5	338.0
2016	0.7	7.6	15.3	22.9	30.5	1.8	20.4	40.7	61.1	81.4	2.9	86.6	173.1	259.7	346.3
2017	0.7	7.8	15.6	23.4	31.2	1.8	20.8	41.7	62.5	83.4	2.9	88.6	177.3	265.9	354.6
2018	0.7	8.0	16.0	24.0	32.0	1.8	21.3	42.7	64.0	85.4	2.9	90.7	181.4	272.2	362.9
2019	0.7	8.2	16.4	24.5	32.7	1.8	21.8	43.7	65.5	87.3	2.9	92.8	185.6	278.4	371.2
2020	0.7	8.4	16.7	25.1	33.4	1.8	22.3	44.6	66.9	89.3	2.9	94.9	189.7	284.6	379.5
2021	0.7	8.5	17.1	25.6	34.2	1.8	22.8	45.6	68.4	91.2	2.9	96.9	193.9	290.8	387.8
2022	0.7	8.7	17.5	26.2	34.9	1.8	23.3	46.6	69.9	93.2	2.9	99.0	198.1	297.1	396.1
2023	0.7	8.9	17.8	26.7	35.6	1.8	23.8	47.6	71.3	95.1	2.9	101.1	202.2	303.3	404.4
2024	0.7	9.1	18.2	27.3	36.4	1.8	24.3	48.5	72.8	97.1	2.9	103.2	206.4	309.5	412.7
2025	0.7	9.3	18.5	27.8	37.1	1.8	24.8	49.5	74.3	99.0	2.9	105.3	210.5	315.8	421.0
2026	0.7	9.5	18.9	28.4	37.8	1.8	25.2	50.5	75.7	101.0	2.9	107.3	214.7	322.0	429.3
2027	0.7	9.6	19.3	28.9	38.6	1.8	25.7	51.5	77.2	102.9	2.9	109.4	218.8	328.2	437.6
2028	0.7	9.8	19.6	29.5	39.3	1.8	26.2	52.4	78.7	104.9	2.9	111.5	223.0	334.4	445.9
2029	0.7	10.0	20.0	30.0	40.0	1.8	26.7	53.4	80.1	106.8	2.9	113.6	227.1	340.7	454.2
2030	0.7	10.2	20.4	30.6	40.8	1.8	27.2	54.4	81.6	108.8	2.9	115.6	231.3	346.9	462.5
PV	**1,066**	**98**	**197**	**295**	**393**	**2,708**	**262**	**525**	**787**	**1,050**	**4,475**	**1,116**	**2,231**	**3,347**	**4,462**
NPV		**-968**	**-870**	**-771**	**-673**		**-2,445**	**-2,183**	**-1,920**	**-1,658**		**-3,360**	**-2,244**	**-1,128**	**-13**

Period	Vancouver to Chehalis					Entire Corridor				
	Expend-itures ($)	Revenue ($) At Various Toll				Expend-itures ($)	Revenue ($) At Various Toll			
		$0.15	$0.30	$0.45	$0.60		$0.15	$0.30	$0.45	$0.60
2005	633.7					2,553.6				
2006	633.7					2,553.6				
2007	633.7					2,553.6				
2008	633.7					2,553.6				
2009	633.7					2,553.6				
2010	1.8	35.8	71.6	107.3	143.1	7.2	133.9	267.7	401.6	535.4
2011	1.8	36.8	73.6	110.3	147.1	7.2	137.6	275.2	412.8	550.4
2012	1.8	37.8	75.6	113.3	151.1	7.2	141.4	282.7	424.1	565.4
2013	1.8	38.8	77.6	116.3	155.1	7.2	145.1	290.2	435.3	580.4
2014	1.8	39.8	79.6	119.4	159.1	7.2	148.8	297.7	446.5	595.4
2015	1.8	40.8	81.6	122.4	163.1	7.2	152.6	305.2	457.8	610.4
2016	1.8	41.8	83.6	125.4	167.2	7.2	156.3	312.7	469.0	625.4
2017	1.8	42.8	85.6	128.4	171.2	7.2	160.1	320.2	480.3	640.4
2018	1.8	43.8	87.6	131.4	175.2	7.2	163.8	327.7	491.5	655.4
2019	1.8	44.8	89.6	134.4	179.2	7.2	167.6	335.2	502.8	670.4
2020	1.8	45.8	91.6	137.4	183.2	7.2	171.3	342.7	514.0	685.4
2021	1.8	46.8	93.6	140.4	187.2	7.2	175.1	350.2	525.3	700.4
2022	1.8	47.8	95.6	143.4	191.2	7.2	178.8	357.7	536.5	715.4
2023	1.8	48.8	97.6	146.4	195.2	7.2	182.6	365.2	547.8	730.4
2024	1.8	49.8	99.6	149.4	199.2	7.2	186.3	372.7	559.0	745.4
2025	1.8	50.8	101.6	152.4	203.2	7.2	190.1	380.2	570.3	760.4
2026	1.8	51.8	103.6	155.4	207.2	7.2	193.8	387.7	581.5	775.4
2027	1.8	52.8	105.6	158.4	211.2	7.2	197.6	395.2	592.8	790.3
2028	1.8	53.8	107.6	161.4	215.2	7.2	201.3	402.7	604.0	805.3
2029	1.8	54.8	109.6	164.4	219.3	7.2	205.1	410.2	615.3	820.3
2030	1.8	55.8	111.6	167.4	223.3	7.2	208.8	417.7	626.5	835.3
PV	**2,723**	**539**	**1,077**	**1,616**	**2,154**	**10,972**	**2,015**	**4,030**	**6,044**	**8,059**
NPV		**-2,184**	**-1,646**	**-1,107**	**-569**		**-8,957**	**-6,942**	**-4,928**	**-2,913**

Exhibit 6-17
Comparing Costs and Revenues for 2 Truck Lanes w/ Rail (Millions of 2003 $)
50% Diversion of Through Trucks

Period	Rt 20 to Canada					I-90 to Rt 20					Chehalis to I-90				
	Expend-itures ($)	Revenue At Various Toll Rate ($/mile)				Expend-itures ($)	Revenue ($) At Various Toll Rate ($/mile)				Expend-itures ($)	Revenue ($) At Various Toll Rate ($/mile)			
		$0.15	$0.30	$0.45	$0.60		$0.15	$0.30	$0.45	$0.60		$0.15	$0.30	$0.45	$0.60
2005	434.8					752.6					1,290.9				
2006	434.8					752.6					1,290.9				
2007	434.8					752.6					1,290.9				
2008	434.8					752.6					1,290.9				
2009	434.8					752.6					1,290.9				
2010	0.9	6.5	13.1	19.6	26.1	1.6	17.4	34.9	52.3	69.7	2.8	74.1	148.2	222.3	296.5
2011	0.9	6.7	13.4	20.1	26.9	1.6	17.9	35.8	53.8	71.7	2.8	76.2	152.4	228.6	304.8
2012	0.9	6.9	13.8	20.7	27.6	1.6	18.4	36.8	55.2	73.6	2.8	78.3	156.5	234.8	313.1
2013	0.9	7.1	14.2	21.2	28.3	1.6	18.9	37.8	56.7	75.6	2.8	80.3	160.7	241.0	321.4
2014	0.9	7.3	14.5	21.8	29.0	1.6	19.4	38.8	58.2	77.5	2.8	82.4	164.8	247.3	329.7
2015	0.9	7.4	14.9	22.3	29.8	1.6	19.9	39.7	59.6	79.5	2.8	84.5	169.0	253.5	338.0
2016	0.9	7.6	15.3	22.9	30.5	1.6	20.4	40.7	61.1	81.4	2.8	86.6	173.1	259.7	346.3
2017	0.9	7.8	15.6	23.4	31.2	1.6	20.8	41.7	62.5	83.4	2.8	88.6	177.3	265.9	354.6
2018	0.9	8.0	16.0	24.0	32.0	1.6	21.3	42.7	64.0	85.4	2.8	90.7	181.4	272.2	362.9
2019	0.9	8.2	16.4	24.5	32.7	1.6	21.8	43.7	65.5	87.3	2.8	92.8	185.6	278.4	371.2
2020	0.9	8.4	16.7	25.1	33.4	1.6	22.3	44.6	66.9	89.3	2.8	94.9	189.7	284.6	379.5
2021	0.9	8.5	17.1	25.6	34.2	1.6	22.8	45.6	68.4	91.2	2.8	96.9	193.9	290.8	387.8
2022	0.9	8.7	17.5	26.2	34.9	1.6	23.3	46.6	69.9	93.2	2.8	99.0	198.1	297.1	396.1
2023	0.9	8.9	17.8	26.7	35.6	1.6	23.8	47.6	71.3	95.1	2.8	101.1	202.2	303.3	404.4
2024	0.9	9.1	18.2	27.3	36.4	1.6	24.3	48.5	72.8	97.1	2.8	103.2	206.4	309.5	412.7
2025	0.9	9.3	18.5	27.8	37.1	1.6	24.8	49.5	74.3	99.0	2.8	105.3	210.5	315.8	421.0
2026	0.9	9.5	18.9	28.4	37.8	1.6	25.2	50.5	75.7	101.0	2.8	107.3	214.7	322.0	429.3
2027	0.9	9.6	19.3	28.9	38.6	1.6	25.7	51.5	77.2	102.9	2.8	109.4	218.8	328.2	437.6
2028	0.9	9.8	19.6	29.5	39.3	1.6	26.2	52.4	78.7	104.9	2.8	111.5	223.0	334.4	445.9
2029	0.9	10.0	20.0	30.0	40.0	1.6	26.7	53.4	80.1	106.8	2.8	113.6	227.1	340.7	454.2
2030	0.9	10.2	20.4	30.6	40.8	1.6	27.2	54.4	81.6	108.8	2.8	115.6	231.3	346.9	462.5
PV	**1,866**	**98**	**197**	**295**	**393**	**3,229**	**262**	**525**	**787**	**1,050**	**5,539**	**1,116**	**2,231**	**3,347**	**4,462**
NPV		**-1,767**	**-1,669**	**-1,571**	**-1,473**		**-2,967**	**-2,704**	**-2,442**	**-2,180**		**-4,423**	**-3,308**	**-2,192**	**-1,076**

Period	Vancouver to Chehalis					Entire Corridor				
	Expend-itures ($)	Revenue ($) At Various Toll				Expend-itures ($)	Revenue ($) At Various Toll Rate			
		$0.15	$0.30	$0.45	$0.60		$0.15	$0.30	$0.45	$0.60
2005	818.0					3,296.3				
2006	818.0					3,296.3				
2007	818.0					3,296.3				
2008	818.0					3,296.3				
2009	818.0					3,296.3				
2010	1.8	35.8	71.6	107.3	143.1	7.2	133.9	267.7	401.6	535.4
2011	1.8	36.8	73.6	110.3	147.1	7.2	137.6	275.2	412.8	550.4
2012	1.8	37.8	75.6	113.3	151.1	7.2	141.4	282.7	424.1	565.4
2013	1.8	38.8	77.6	116.3	155.1	7.2	145.1	290.2	435.3	580.4
2014	1.8	39.8	79.6	119.4	159.1	7.2	148.8	297.7	446.5	595.4
2015	1.8	40.8	81.6	122.4	163.1	7.2	152.6	305.2	457.8	610.4
2016	1.8	41.8	83.6	125.4	167.2	7.2	156.3	312.7	469.0	625.4
2017	1.8	42.8	85.6	128.4	171.2	7.2	160.1	320.2	480.3	640.4
2018	1.8	43.8	87.6	131.4	175.2	7.2	163.8	327.7	491.5	655.4
2019	1.8	44.8	89.6	134.4	179.2	7.2	167.6	335.2	502.8	670.4
2020	1.8	45.8	91.6	137.4	183.2	7.2	171.3	342.7	514.0	685.4
2021	1.8	46.8	93.6	140.4	187.2	7.2	175.1	350.2	525.3	700.4
2022	1.8	47.8	95.6	143.4	191.2	7.2	178.8	357.7	536.5	715.4
2023	1.8	48.8	97.6	146.4	195.2	7.2	182.6	365.2	547.8	730.4
2024	1.8	49.8	99.6	149.4	199.2	7.2	186.3	372.7	559.0	745.4
2025	1.8	50.8	101.6	152.4	203.2	7.2	190.1	380.2	570.3	760.4
2026	1.8	51.8	103.6	155.4	207.2	7.2	193.8	387.7	581.5	775.4
2027	1.8	52.8	105.6	158.4	211.2	7.2	197.6	395.2	592.8	790.3
2028	1.8	53.8	107.6	161.4	215.2	7.2	201.3	402.7	604.0	805.3
2029	1.8	54.8	109.6	164.4	219.3	7.2	205.1	410.2	615.3	820.3
2030	1.8	55.8	111.6	167.4	223.3	7.2	208.8	417.7	626.5	835.3
PV	**3,510**	**539**	**1,077**	**1,616**	**2,154**	**14,144**	**2,015**	**4,030**	**6,044**	**8,059**
NPV		**-2,971**	**-2,433**	**-1,894**	**-1,356**		**-12,129**	**-10,114**	**-8,099**	**-6,085**

Net Present Value Feasibility Results

The results of the NPV analysis are summarized in the following exhibit.

Exhibit 6-18
Summary of Net Present Value Under all Scenarios

Feasibility of Truck-Only Lanes Assuming 25% Diversion of Through Trucks

	4 Truck-Only Lanes				2 Truck-Only Lanes				2 Truck-Only Lanes w/ Rail			
	NPV ($ Mill) at VariousToll Rates ($/mile)				NPV ($ Mill) at VariousToll Rates ($/mile)				NPV ($ Mill) at VariousToll Rates ($/mile)			
Super Section	**$0.15**	**$0.30**	**$0.45**	**$0.60**	**$0.15**	**$0.30**	**$0.45**	**$0.60**	**$0.15**	**$0.30**	**$0.45**	**$0.60**
Rt 20 to Canada	-1,324	-1,275	-1,226	-1,177	-1,017	-968	-919	-870	-1,817	-1,767	-1,718	-1,669
I-90 to Rt 20	-3,634	-3,503	-3,372	-3,240	-2,576	-2,445	-2,314	-2,183	-3,098	-2,967	-2,836	-2,704
Chehalis to I-90	-5,348	-4,791	-4,233	-3,675	-3,917	-3,360	-2,802	-2,244	-4,981	-4,423	-3,865	-3,308
Vancouver to Chehalis	-3,874	-3,605	-3,336	-3,066	-2,454	-2,184	-1,915	-1,646	-3,241	-2,971	-2,702	-2,433
Entire Corridor	-14,181	-13,173	-12,166	-11,159	-9,965	-8,957	-7,950	-6,942	-13,136	-12,129	-11,122	-10,114

Feasibility of Truck-Only Lanes Assuming 50% Diversion of Through Trucks

	4 Truck-Only Lanes				2 Truck-Only Lanes				2 Truck-Only Lanes w/ Rail			
	NPV ($ Mill) at VariousToll Rates ($/mile)				NPV ($ Mill) at VariousToll Rates ($/mile)				NPV ($ Mill) at VariousToll Rates ($/mile)			
Super Section	**$0.15**	**$0.30**	**$0.45**	**$0.60**	**$0.15**	**$0.30**	**$0.45**	**$0.60**	**$0.15**	**$0.30**	**$0.45**	**$0.60**
Rt 20 to Canada	-1,275	-1,177	-1,078	-980	-968	-870	-771	-673	-1,767	-1,669	-1,571	-1,473
I-90 to Rt 20	-3,503	-3,240	-2,978	-2,716	-2,445	-2,183	-1,920	-1,658	-2,967	-2,704	-2,442	-2,180
Chehalis to I-90	-4,791	-3,675	-2,559	-1,444	-3,360	-2,244	-1,128	**-13**	-4,423	-3,308	-2,192	-1,076
Vancouver to Chehalis	-3,605	-3,066	-2,528	-1,989	-2,184	-1,646	-1,107	-569	-2,971	-2,433	-1,894	-1,356
Entire Corridor	-13,173	-11,159	-9,144	-7,129	-8,957	-6,942	-4,928	-2,913	-12,129	-10,114	-8,099	-6,085

Feasibility of Truck-Only Lanes Assuming 75% Diversion of Through Trucks

	4 Truck-Only Lanes				2 Truck-Only Lanes				2 Truck-Only Lanes w/ Rail			
	NPV ($ Mill) at VariousToll Rates				NPV ($ Mill) at VariousToll				NPV ($ Mill) at VariousToll Rates			
Super Section	**$0.15**	**$0.30**	**$0.45**	**$0.60**	**$0.15**	**$0.30**	**$0.45**	**$0.60**	**$0.15**	**$0.30**	**$0.45**	**$0.60**
Rt 20 to Canada	-1,226	-1,078	-931	-784	-919	-771	-624	-476	-1,718	-1,571	-1,423	-1,276
I-90 to Rt 20	-3,372	-2,978	-2,584	-2,191	-2,314	-1,920	-1,527	-1,133	-2,836	-2,442	-2,048	-1,655
Chehalis to I-90	-4,233	-2,559	-886	**787**	-2,802	-1,128	**545**	**2,218**	-3,865	-2,192	-519	**1,155**
Vancouver to Chehalis	-3,336	-2,528	-1,720	-912	-1,915	-1,107	-300	**508**	-2,702	-1,894	-1,087	-279
Entire Corridor	-12,166	-9,144	-6,122	-3,099	-7,950	-4,928	-1,905	**1,117**	-11,122	-8,099	-5,077	-2,055

Feasibility of Truck-Only Lanes Assuming 100% Diversion of Through Trucks

	4 Truck-Only Lanes				2 Truck-Only Lanes				2 Truck-Only Lanes w/ Rail			
	NPV ($ Mill) at VariousToll Rates				NPV ($ Mill) at VariousToll				NPV ($ Mill) at VariousToll Rates			
Super Section	**$0.15**	**$0.30**	**$0.45**	**$0.60**	**$0.15**	**$0.30**	**$0.45**	**$0.60**	**$0.15**	**$0.30**	**$0.45**	**$0.60**
Rt 20 to Canada	-1,177	-980	-784	-587	-870	-673	-476	-280	-1,669	-1,473	-1,276	-1,079
I-90 to Rt 20	-3,240	-2,716	-2,191	-1,666	-2,183	-1,658	-1,133	-609	-2,704	-2,180	-1,655	-1,130
Chehalis to I-90	-3,675	-1,444	**787**	**3,019**	-2,244	**-13**	**2,218**	**4,450**	-3,308	-1,076	**1,155**	**3,386**
Vancouver to Chehalis	-3,066	-1,989	-912	**165**	-1,646	-569	**508**	**1,585**	-2,433	-1,356	-279	**798**
Entire Corridor	-11,159	-7,129	-3,099	930	-6,942	-2,913	**1,117**	**5,146**	-10,114	-6,085	-2,055	**1,975**

The results can be summarized as follows:

- With a 25 percent diversion scenario, and under the best of circumstances, the project developer would be at a financial deficit of between $7 billion and $11 billion, and would recover between 25% and 40% of the project outlays. Under the least favorable of circumstances, the project developer would recover between 7% and 20% of the project outlays. Limiting investments to the most cost effective segments do not yield positive results either.

- With a 50 percent diversion scenario, and under the best of circumstances, the project developer would be at a financial deficit of between \$3 billion and \$7 billion, and would recover between 50% and 80% of the project outlays. Under the least favorable of circumstances, the project developer would recover between 13% and 20% of the project outlays. Focusing on the segment between Chehalis and I-90 could potentially produce a positive financial outcome, but only marginally, and under the best of circumstances.

- With a 75 percent diversion scenario, and under the best of circumstances, the project developer would be at a financial deficit of between \$1.5 billion and \$3 billion, and would recover between 80% and 90% of the project outlays, except for the **2 truck lane approach**, where the results are positive – a 110% recovery of costs and an approximate \$1 billion surplus. Under the least favorable of circumstances, the project developer would recover between 20% and 30% of the project outlays. All three truck lane approaches (4 lane, 2 lane and 2 lane with rail) could provide a positive outcome under the best circumstance. However, focusing on 2 truck lanes along the segment between Chehalis and I-90 provides the best opportunity for success, and positive returns may be gained with a toll rate set as low as \$0.41 per mile.

- A 100 percent diversion scenario is not likely to occur without strict truck routing policies and firm policing thereof, or a uniform revenue collection approach that is applied to all trips along the overall corridor, much like the revenue collection method used for the Alameda Corridor. Under the best of circumstances, the project developer would be at a financial surplus of between \$1 billion and \$5 billion, and would recover between 106% and 160% of the project outlays. Under the least favorable of circumstances, the project developer would recover between 26% and 40% of the project outlays. All three truck lane approaches (4 lane, 2 lane and 2 lane with rail) could provide a positive outcome under the best circumstance. However, focusing on 2 truck lanes along the segment between Chehalis and I-90 provides the best opportunity for success, and positive returns may be gained with a toll rate set as low as \$0.29 per mile.

Conclusion

Based on this analysis, there are several conclusions regarding the financial feasibility of the truck component of the WCC:

1) **The minimum feasible diversion rate is 50 percent.** For the truck component of the WCC to start fully paying for itself, at least half of the current and forecasted through truck traffic along the corridor would need to be attracted to the WCC. In order for this to happen, the alternative truck WCC route would need to offer some combination of transport cost savings and productivity gains that would compensate for a significant share of the cost of the toll, or exceed the cost of the toll.

2) **The 2-lane option offers the best opportunity for success.** The lower project development outlays related to this approach enhance the financial feasibility of the project. However, with limited passing opportunities, this approach does present operational challenges for traffic. These issues will need to be resolved with improved engineering and vehicle technologies.

3) **The segment between Chehalis and I-90 offers the best opportunity for success.** This segment has the highest volumes of through truck trips and hence performs best from a revenue potential standpoint. In addition, the segment between Chehalis and the Oregon border has similar volumes and could potentially provide similar revenue opportunities.

4) **The rail add-on to the 2-lane alternative diminishes the financial feasibility.** There are significant public benefits to adding rail capacity along the WCC, including improved capacity for passenger service along the coastal rail corridor. However, this approach adds significant cost to the project and undermines the financial feasibility of the truck component of the WCC. The rail option can only improve financial feasibility if additional revenues are sought from the rail users (of the corridor) or through public subsidy.

5) **The project will likely need some combination of public subsidy.** The feasibility of a user financed truck component to the WCC is marginally feasible and will need some combination of subsidy to improve its feasibility beyond marginal. Subsidy could be in the form of contributions that lower the upfront cost, such as ROW donations, or direct capital infusion including Federal grant funding by qualifying as a nationally significant demonstration project, or credit based backing to help share the risk of securing project related debt financing, or government commitments to cover any shortfall in revenue.